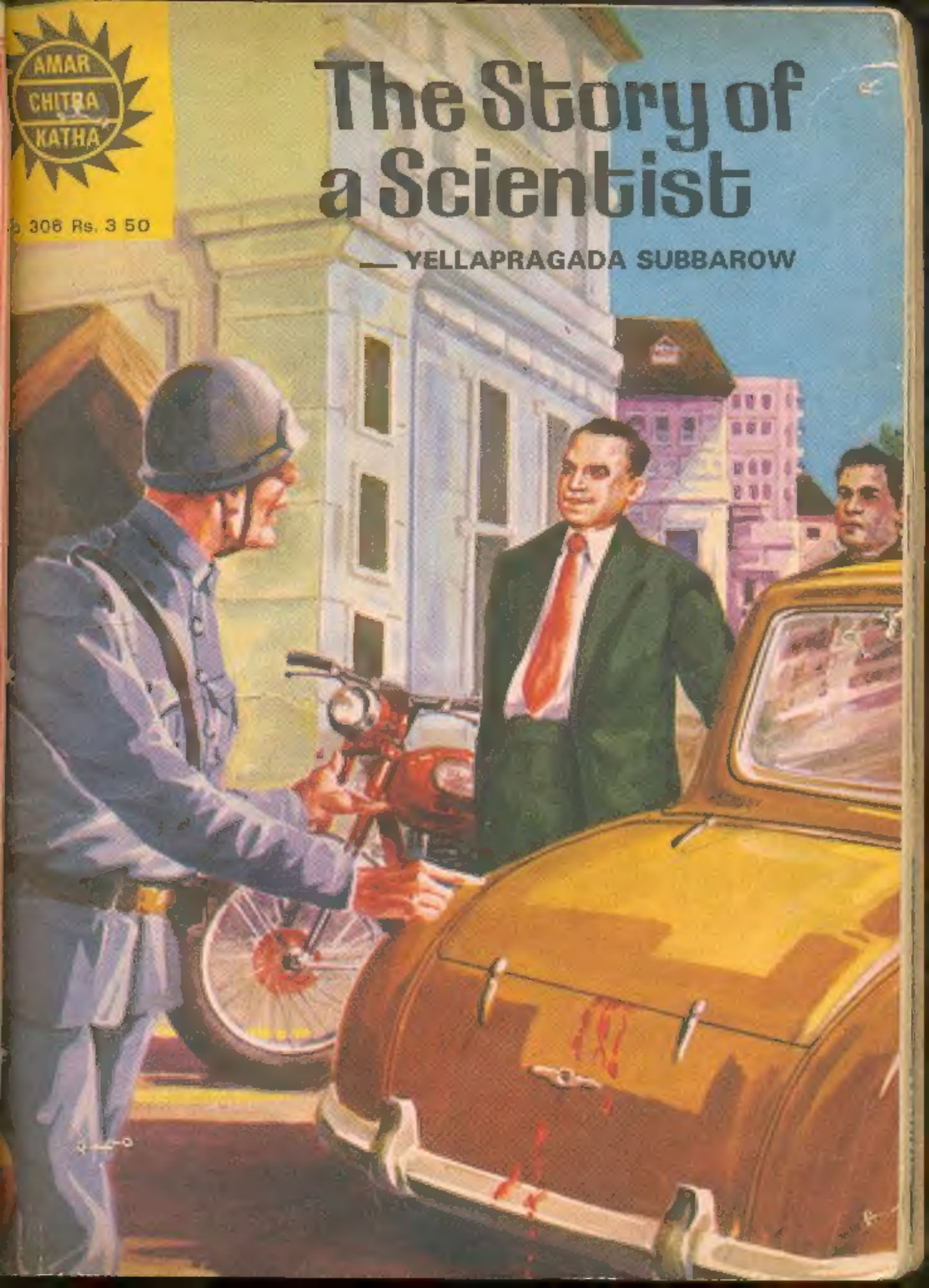
AMAR CHITRA KATHA

No. 306 Rs. 3 50

The Story of a Scientist

— YELLAPRAGADA SUBBAROW



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Editor
ANANT PAI

Associate Editors
KAMALA CHANDRAKANT
SUBBA RAO

Script
R. ANAND
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Artworks
SOUREN ROY

Art Consultant
RAM WAEERKAR

Prodution
GOVIND KOTWANI

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Chitra Katha
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The Story of a Scientist

Yellapragada SubbaRow was a 'rishi' of a scientist. If he is not as wellknown in our country it is because, like the 'rishis' of yore—of whom we know little—his pursuit of knowledge was free of ego. The man who discovered Aureomycin, the man who synthesized folic acid, the man who gave us Hetrazan never pushed himself into the glare of publicity. As the director of research his name should have been at least at the top of the team. But often it took its self-effacing niche in an alphabetical order.

Neither the lowly status of an Indian in the U.S.A. of the early twentieth century nor the demands of applied research stained the scholastic integrity of SubbaRow. Such was the strength of his moral fibre—a strength which distinguished his personal as well as his professional life.

Shri S. P. K. Gupta took thirteen years to write his biography of Yellapragada SubbaRow. It is now being published by Suparna Publications, 5-17 Sriramakrishnapuram, Hyderabad, Andhra Pradesh 500 035; in two volumes. Shri Gupta's research took him to the places and persons SubbaRow was associated with in India and the U.S.A. Shri Gupta is now in Moscow as the special correspondent of the P.T.I.

Editor

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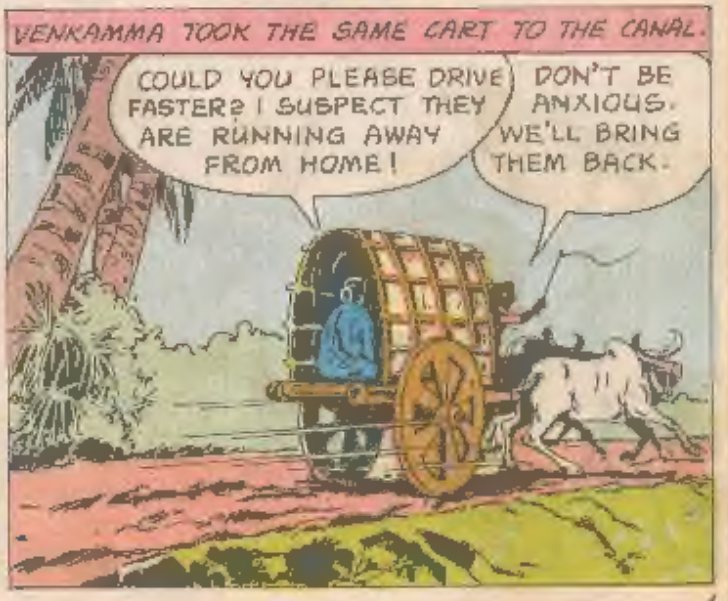
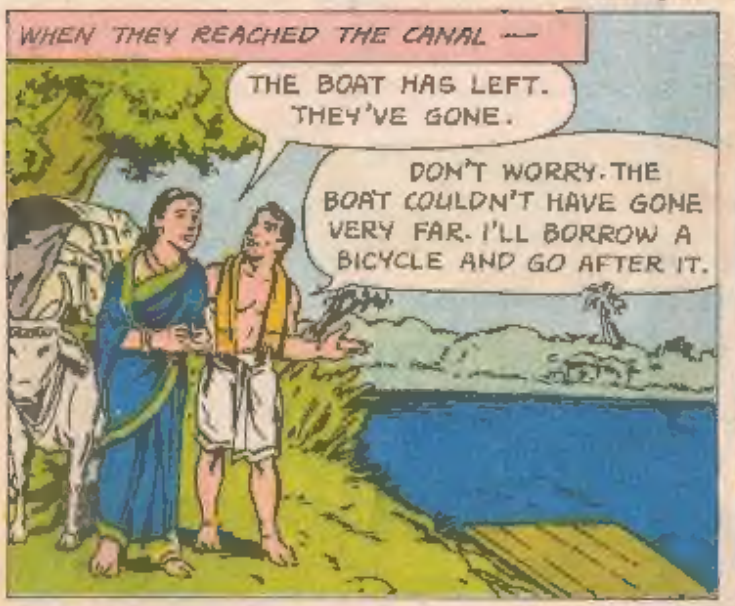
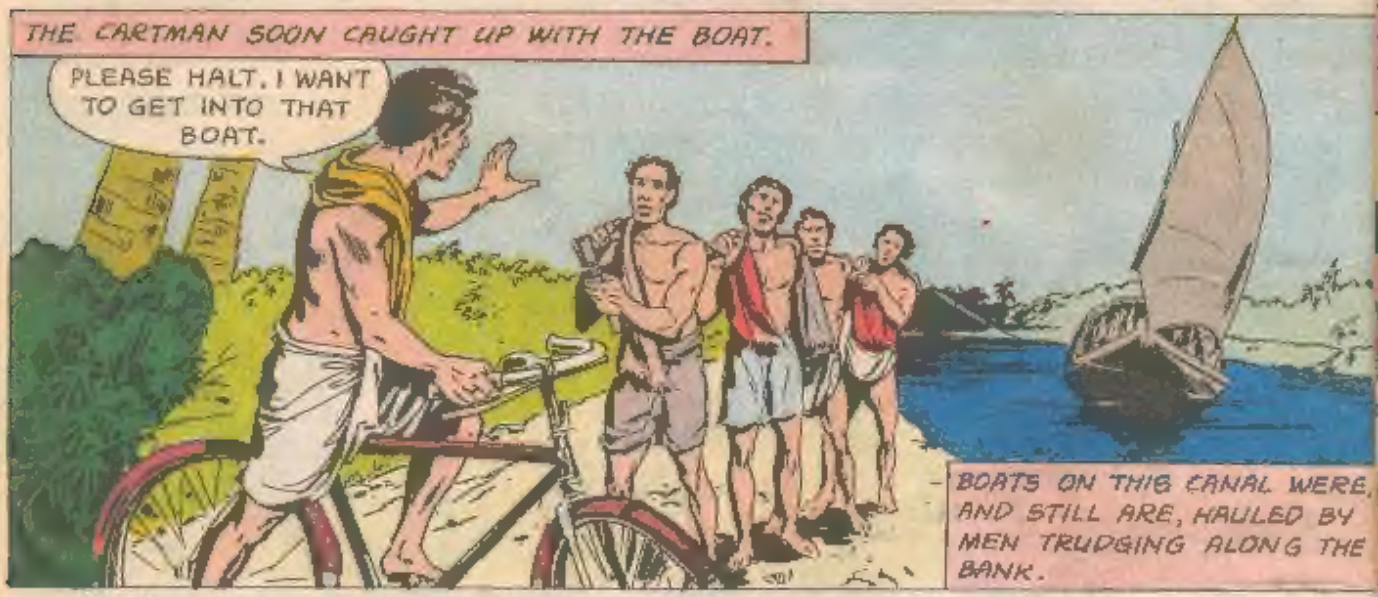
YELLAPRAGADA SUBBAROW




WHEN THEY REACHED THE CANAL —
THE BOAT HAS LEFT. THEY'VE GONE.
DON'T WORRY. THE BOAT COULDN'T HAVE GONE VERY FAR. I'LL BORROW A BICYCLE AND GO AFTER IT.


THE CARTMAN SOON CAUGHT UP WITH THE BOAT.
PLEASE HALT. I WANT TO GET INTO THAT BOAT.
BOATS ON THIS CANAL WERE, AND STILL ARE, HAULED BY MEN TRUDGING ALONG THE BANK.

THE MEN PULLED THE BOAT TOWARDS THE BANK AND TIED THE ROPE TO A TREE. SOON —
COME ON, BOYS. YOU'RE GOING RIGHT BACK HOME.
NO!

AND SUBBAROW TRIED TO JUMP INTO THE WATER. BUT —
WE'RE NOT SWIMMING HOME, SON. WE'RE GETTING INTO ANOTHER BOAT.

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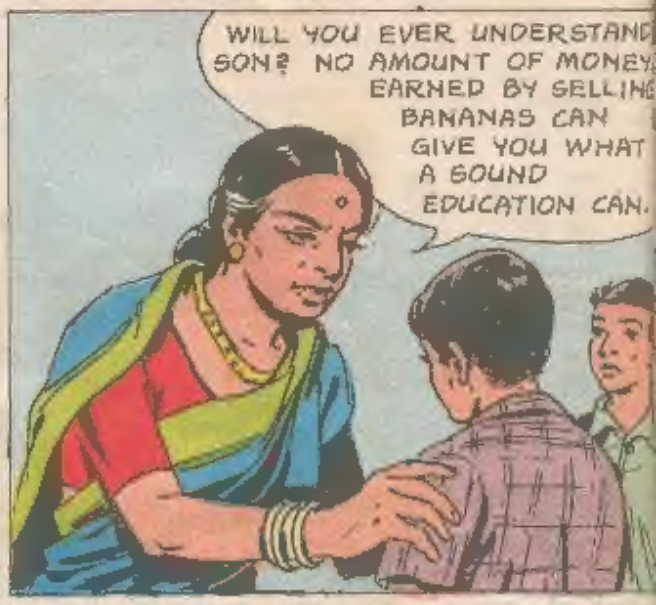
* IN ANDHRA PRADESH

WHAT PRANKS HAVE YOU BEEN UP TO NOW?

WHERE WERE YOU GOING? COME ON, SPEAK UP!

I'LL TELL YOU, AUNTY. WE ... WE WERE GOING TO KASHI TO EARN MONEY... BY SELLING BANANAS.


WILL YOU EVER UNDERSTAND SON? NO AMOUNT OF MONEY EARNED BY SELLING BANANAS CAN GIVE YOU WHAT A SOUND EDUCATION CAN.

SUBBAROW TRIED HARD TO CONCENTRATE ON HIS STUDIES, BUT HIS MIND WOULD KEEP WANDERING.

FINALLY WHEN HE APPEARED FOR THE MATRICULATION EXAMINATION, HE FAILED. SO HE WAS SENT FOR A SECOND ATTEMPT TO RAJAHMUNDRY, WHERE HIS BROTHER, PURUSHOTTAM, A SCHOOLTEACHER, LIVED

THE ONLY SUBJECT I'M GOOD AT IS MATHEMATICS. I'LL NEVER PASS THIS EXAMINATION.

YOU WILL. DON'T LOSE HEART, SUBBUDU. THAT'S THE WORST THING YOU COULD DO TO YOURSELF.

LIFE IS FULL OF TESTS AND FAILURES. BUT THEY SHOULD ONLY GOAD YOU TO ACHIEVE WHAT YOU WANT.

PURUSHOTTAM WAS AN ACTIVE NATIONALIST. HIS HOME WAS A MEETING PLACE FOR THE FREEDOM-FIGHTERS OF THE TOWN.

SUBBAROW KEENLY FOLLOWED THE DISCUSSIONS. HIS INVOLVEMENT IN THE INTELLECTUAL FERMENT OF THE CITY LEFT HIM LITTLE TIME FOR STUDIES. AND HE FAILED AGAIN.

HE WENT TO MADRAS TO TRY A THIRD TIME. TWO MONTHS BEFORE THE EXAMINATION HIS FATHER DIED AND HE RETURNED HOME. CONDITIONS AT HOME WERE AT THEIR WORST. YET ——

KEEP THIS MONEY FOR YOUR FARE BACK AND YOUR EXAMINATION FEE.

BUT HOW... WHERE...?

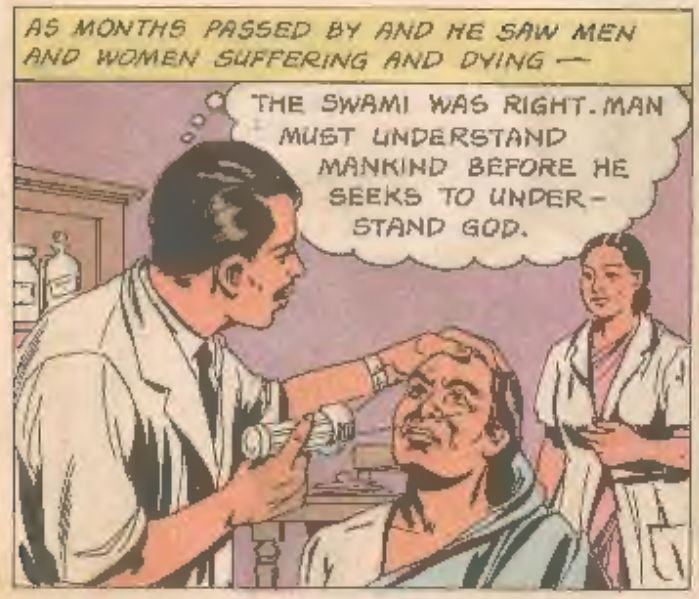
I SOLD MY GOLD ORNAMENTS.

MOTHER...!

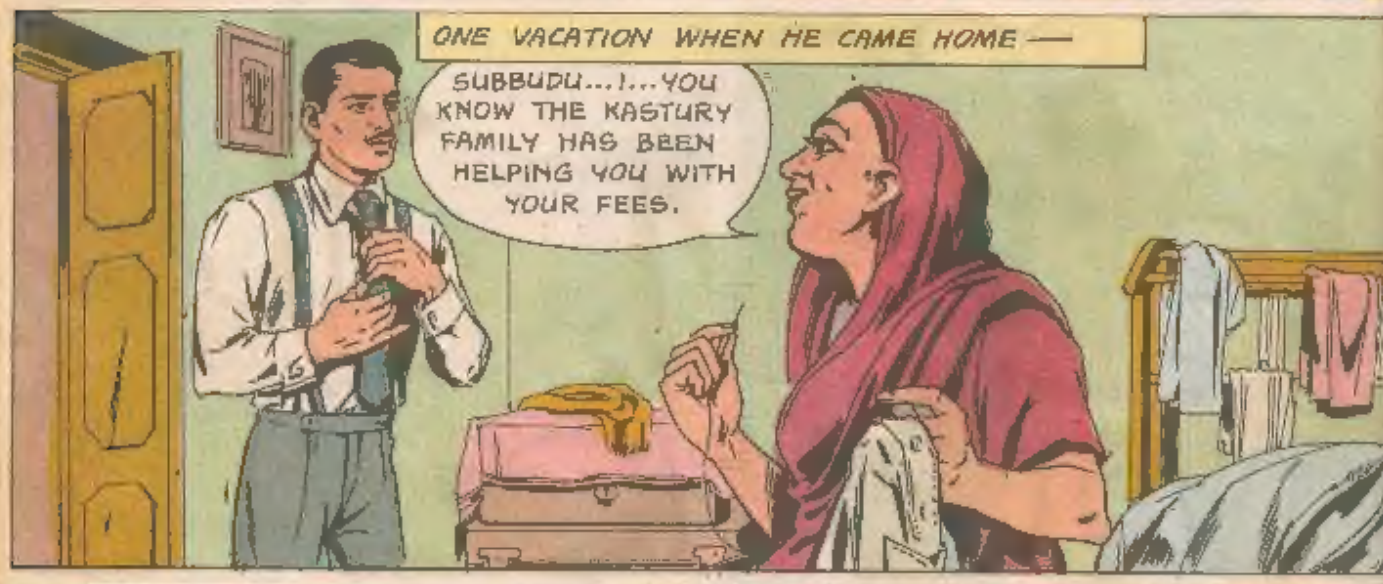
FOR THE FIRST TIME IN HIS LIFE SUBBAROW UNDERSTOOD HIS MOTHER.

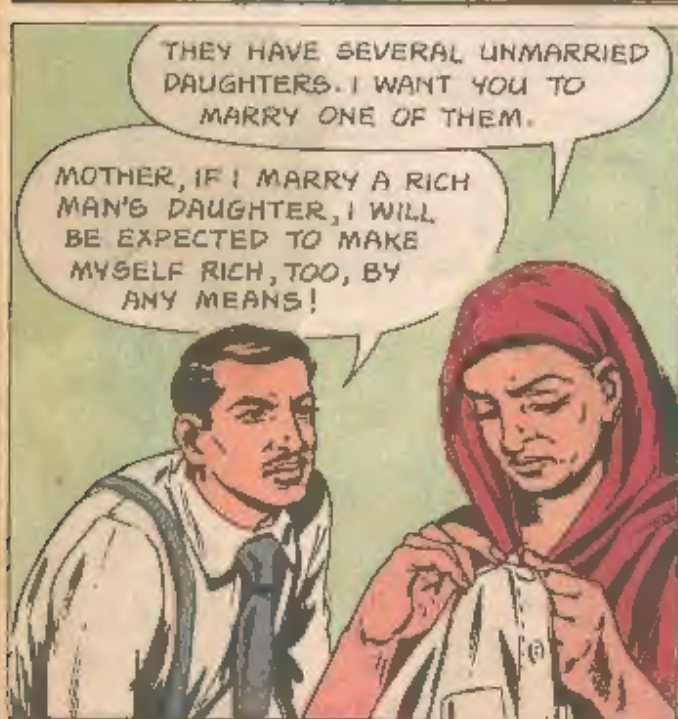
THIS TIME HE PASSED THE EXAMINATION AND JOINED PRESIDENCY COLLEGE, MADRAS. IT WAS THE YEAR, 1913.
AROUND THE SAME TIME HE DEVELOPED AN INTEREST IN THE SPIRITUAL LIFE. HE STARTED VISITING THE RAMAKRISHNA MISSION.
WHEN HE PASSED THE INTERMEDIATE EXAMINATION —
I WILL NOW HAVE TO FIX MY GOAL LIFE.
ON THE FOLLOWING DAY, SUBBAROW WENT TO THE RAMAKRISHNA MISSION. HE HAD MAD HIS CHOICE.
SWAMIJI, I WANT TO BECOME A SANYASI.
WHAT FOR?

I WANT TO REALISE GOD. I WANT TO UNDERSTAND THE RELATION OF MAN TO GOD.
FOR THAT YOU MUST FIRST UNDERSTAND MAN'S RESPONSIBILITY TO MAN.
WHY DON'T YOU BECOME A DOCTOR?
A DOCTOR?
YES. YOU COULD WORK IN ONE OF OUR CLINICS.
I'LL THINK IT OVER, SWAMIJI.
HE DID AND DECIDED TO JOIN THE MADRAS MEDICAL COLLEGE. HIS MOTHER WAS SURPRISED, BUT PLEASED.


AS MONTHS PASSED BY AND HE SAW MEN AND WOMEN SUFFERING AND DYING —
THE SWAMI WAS RIGHT. MAN MUST UNDERSTAND MANKIND BEFORE HE SEEKS TO UNDER-STAND GOD.

SUBBAROW WAS FIRED WITH A NEW ZEAL. HE PLUNGED INTO HIS STUDIES WITH RENEWED ENTHUSIASM.


ONE VACATION WHEN HE CAME HOME —
SUBBUDU...!...YOU KNOW THE KASTURY FAMILY HAS BEEN HELPING YOU WITH YOUR FEES.


THEY HAVE SEVERAL UNMARRIED DAUGHTERS. I WANT YOU TO MARRY ONE OF THEM.
MOTHER, IF I MARRY A RICH MAN'S DAUGHTER, I WILL BE EXPECTED TO MAKE MYSELF RICH, TOO, BY ANY MEANS!

NO, MOTHER, I AM NOT INTERESTED. I DO NOT WANT TO RUN AFTER RICHES.

EVENTUALLY, HOWEVER, HE WAS PERSUADED TO MARRY SESHAGIRI, ONE OF THE DAUGHTERS. THE WEDDING TOOK PLACE IN 1919.

AFTER THE WEDDING, SUBBAROW RETURNED TO COLLEGE. IT WAS NOW HIS FOURTH YEAR.

IN AUGUST 1920, GANDHIJI LAUNCHED THE NON COOPERATION MOVEMENT.

SUBBAROW SUPPORTED IT BY WEARING KHADI SURGICAL GOWNS.

A KHADI GOWN! FANCY THAT! DO YOU THINK MR GANDHI WILL BECOME THE NEXT VICEROY?

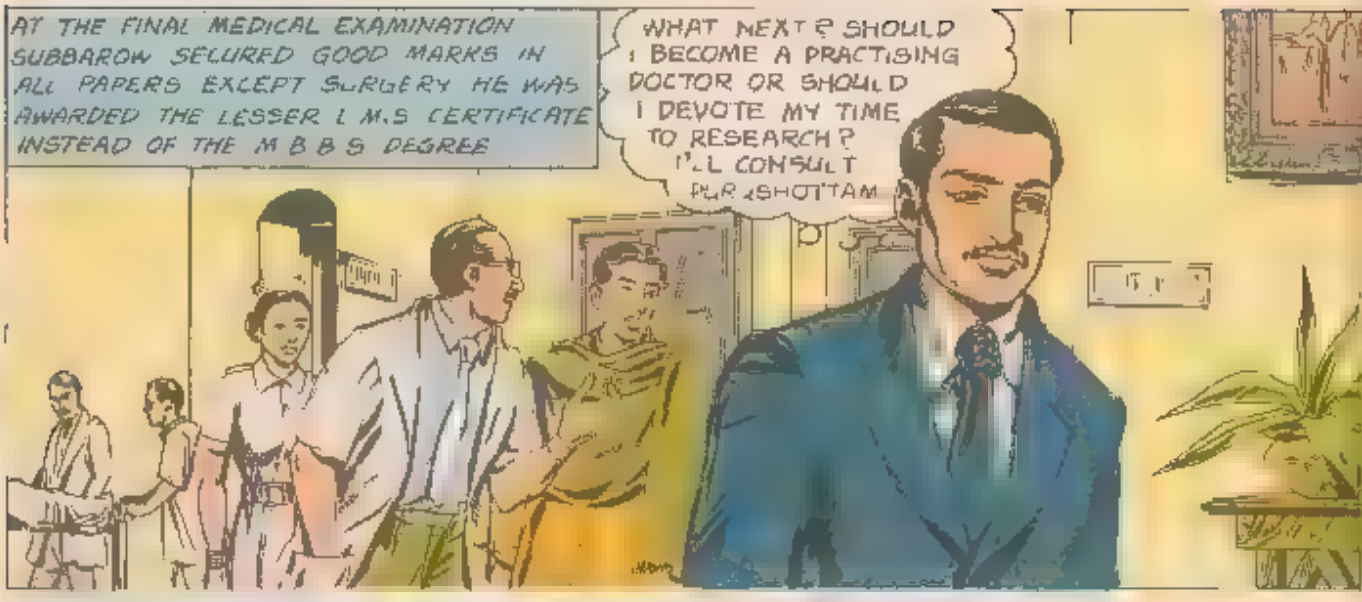
NO, SIR. I DON'T THINK HE WOULD CONDESCEND TO BECOME ONE, SIR

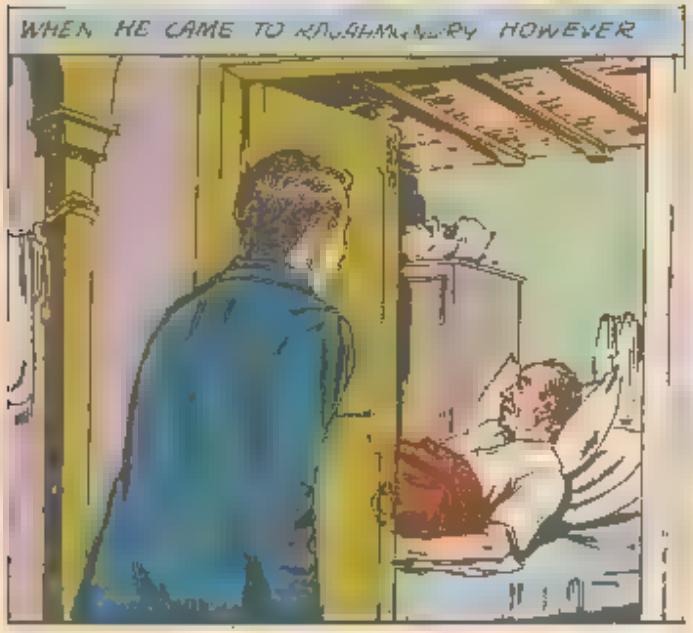
LATER --

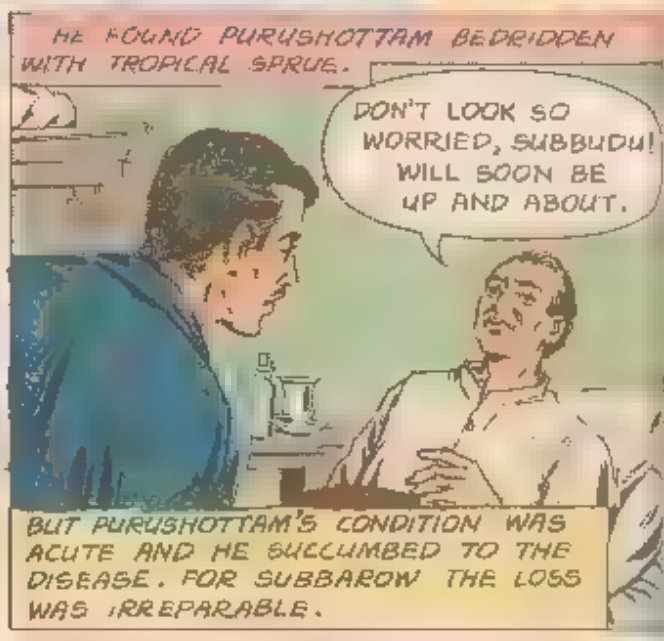
SUBBAROW, DR. BRADFIELD DIDN'T LIKE YOUR RETORT.

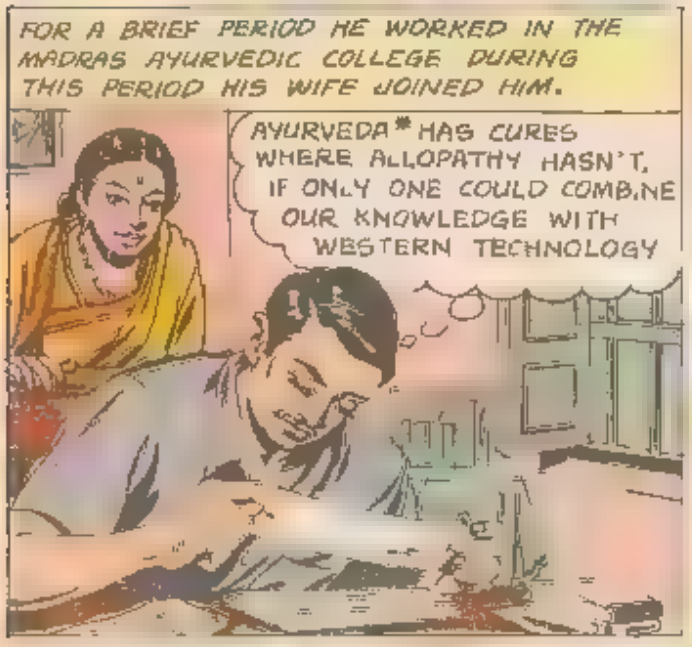
HE ASKED FOR IT

DON'T FORGET HE IS THE PROFESSOR OF SURGERY. FOR YOUR SAKE I HOPE HE FORGETS THE INCIDENT









* INDIAN SYSTEM OF MEDICINE

HE DECIDED TO ACCEPT DR STRONG'S OFFER
AND RAISE SOME MONEY.
WITH GREAT RELUCTANCE SESHAGIRI GAVE HER CONSENT A LOCAL TRUST OFFERED
HE WALKED INTO DR. STRONG'S OFFICE AT BOSTON, WITH ONLY A HUNDRED DOLLARS IN HIS POCKET, FIFTY SHORT OF THE ADMISSION FEE. WHEN DR. STRONG HEARD HIS STORY —
USE THIS, PAY THE FEES AND ENROLL YOURSELF.
AND
'LL FIND A JOB, S.R
IN THOSE DAYS INDIAN DOCTORS WERE NOT ALLOWED TO PRACTISE MEDICINE IN AMERICA. THE ONLY JOB SUBBAROW COULD GET IN A HOSPITAL WAS THAT OF WASHING UP URINALS AND BED-PANS. HE ACCEPTED !

YET HE MANAGED TO FIND TIME TO STUDY AND PASSED THE REQUIRED EXAMINATION. HE WAS AWARDED THE DIPLOMA IN TROPICAL MEDICINE.

WHAT ARE YOUR PLANS NOW?

THERE ARE SO MANY TROPICAL DISEASES FOR WHICH NO CURE HAS YET BEEN FOUND. I INTEND TO DO RESEARCH IN THAT FIELD.

GOOD LUCK TO YOU. I AM LEAVING FOR SOUTH AMERICA ON AN EXPEDITION.

THAT YEAR SUBBAROW ENROLLED HIMSELF FOR A SUMMER COURSE IN BIO-CHEMISTRY AT THE HARVARD SCHOOL OF MEDICINE AND WORKED UNDER PROF. FISKE.

SUBBAROW, WE ARE TRYING TO PERFECT THE METHOD OF ANALYSING BLOOD, URINE AND TISSUE FOR PHOSPHORUS

YOUR FIRST TASK IS TO DISCOVER A FAST-WORKING CHEMICAL THAT HELPS TO ESTIMATE THE PHOSPHORUS CONTENT IN TISSUES

SUBBAROW WORKED HARD. HE ENTERED HIS LABORATORY AT EIGHT IN THE MORNING AND LEFT IT ONLY WELL PAST MIDNIGHT. AT LAST —

I'VE FOUND THE ANSWER. THIS CHEMICAL GIVES THE DESIRED RESULT IN LESS THAN A MINUTE

BUT THAT CHEMICAL IS DIFFICULT TO PREPARE. WE NEED SOMETHING SIMPLER.

FISKE WAS METICULOUS TO A FAULT, A HARD TASKMASTER AND DIFFICULT TO PLEASE. SUBBAROW WORKED DAY AND NIGHT FOR THE NEXT FOUR MONTHS AND CAME UP WITH THE RIGHT CHEMICAL.

DR FISKE, I'VE FOUND IT. THIS HAS STOOD ALL TESTS, AND IS AVAILABLE IN THE MARKET.

EXCELLENT, SUBBAROW! WE CAN NOW PUBLISH THE RESULTS

ONE OF THE FIRST LESSONS A STUDENT OF BIO-CHEMISTRY LEARNS TODAY IS THE FISKE-SUBBAROW METHOD OF MEASURING PHOSPHORUS IN THE PREPARED TISSUE

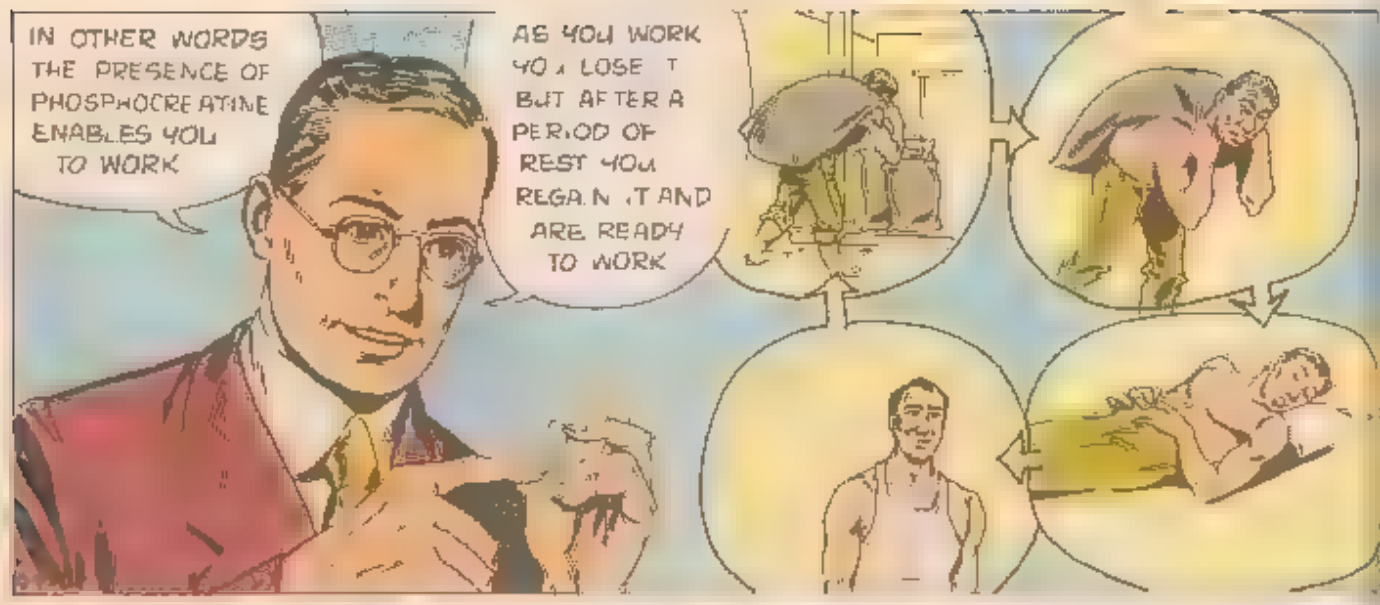
WHEN THE HARVARD MEDICAL SCHOOL REOPENED, SUBBAROW WAS ACCEPTED AS A POST-GRADUATE STUDENT ONE OF THE PROJECTS HE TOOK UP WAS ABOUT THE SOURCE OF ENERGY WHICH HELPS US MOVE OUR LIMBS, LIFT WEIGHTS AND ALSO RUN.

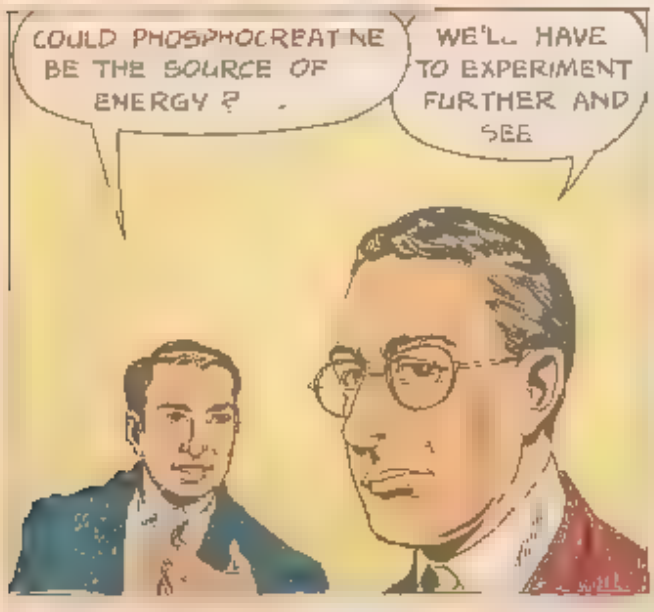
THE FISKE-SUBBAROW INVESTIGATION LED TO THE DISCOVERY OF A SUBSTANCE IN THE HUMAN BODY CALLED PHOSPHOCREATINE.

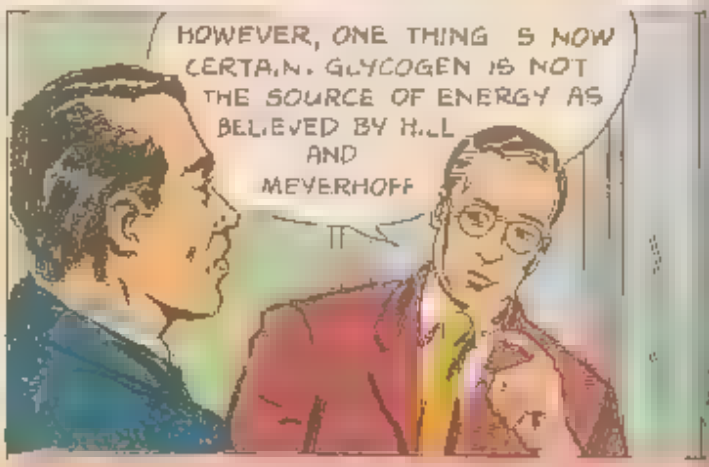
WHEN I PUT A MUSCLE TO WORK BY ELECTRIC STIMULATION THE PHOSPHOCREATINE LEVEL BEGINS TO FALL

IT COMPLETELY DISAPPEARS WHEN I CUT OFF THE BLOOD SUPPLY AND DRIVE THE MUSCLE TO THE POINT OF FATIGUE BY CONTINUED ELECTRIC STIMULATION

AND IT REAPPEARS WHEN THE MUSCLE IS ALLOWED A PERIOD OF REST!





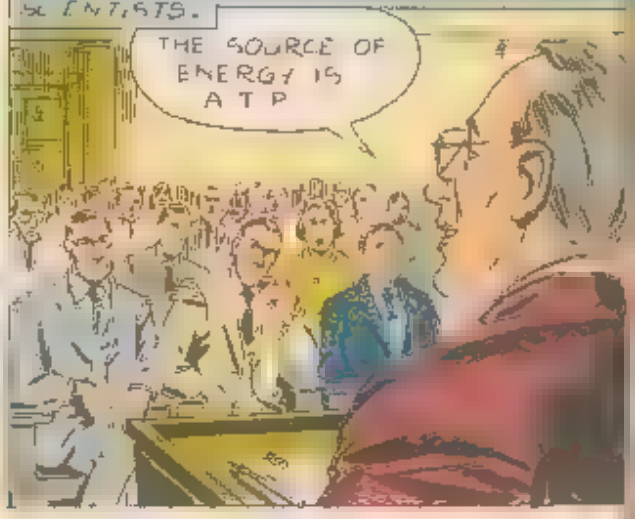


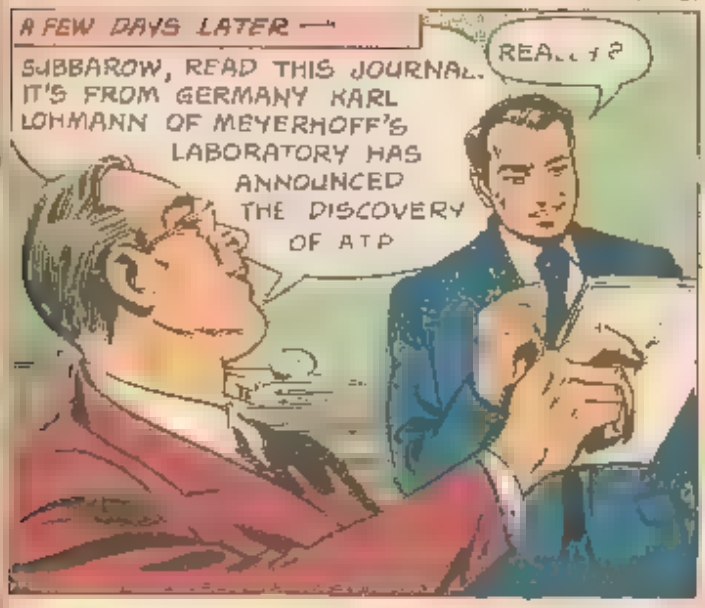
DR. HILL OF LONDON UNIVERSITY AND PROF. MEYERHOFF OF GERMANY HAD WON THE NOBEL PRIZE IN 1922 FOR THEIR THEORY THAT GLYCOGEN IS THE SOURCE OF MUSCULAR ENERGY

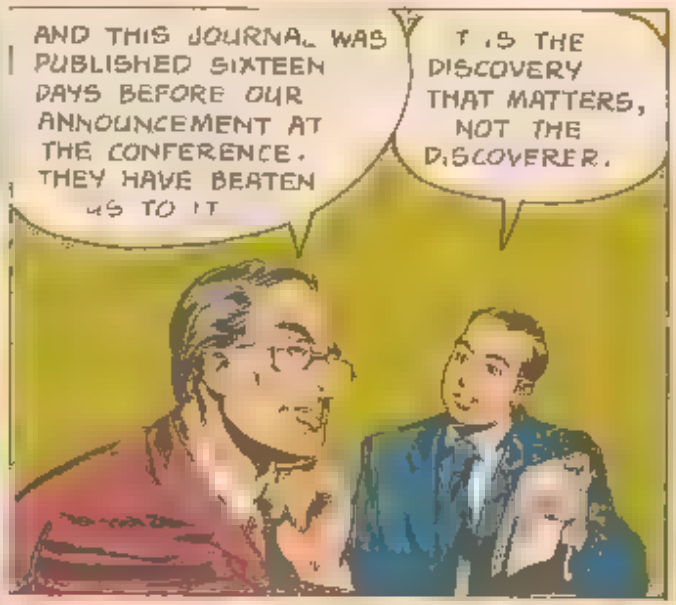
FISKE HOWEVER ANNOUNCED THE DISCOVERY OF PHOSPHOCREATINE. THE AMERICAN MEDICAL ASSOCIATION JOURNAL HAILED THE DISCOVERY IN AN EDITORIAL.

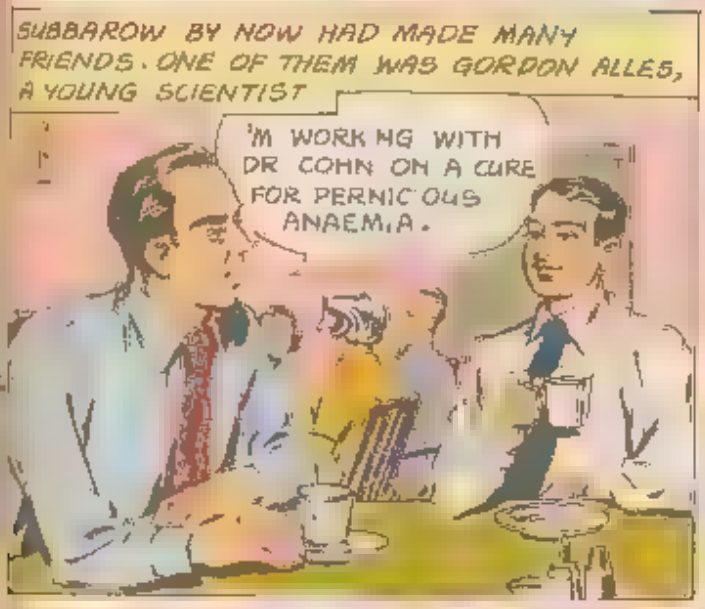
MEYERHOFF HAD SEEN THE IMPORTANCE OF THE PHOSPHOCREATINE DISCOVERY AND PLUNGED INTO FOLLOW UP STUDIES.

PROF FISKE AND SUBBAROW ALSO CONTINUED TO WORK. FINALLY THEY FOUND THE ANSWER TO THE ENERGY PUZZLE. THEY ANNOUNCED THEIR DISCOVERY AT AN INTERNATIONAL CONFERENCE OF SCIENTISTS.

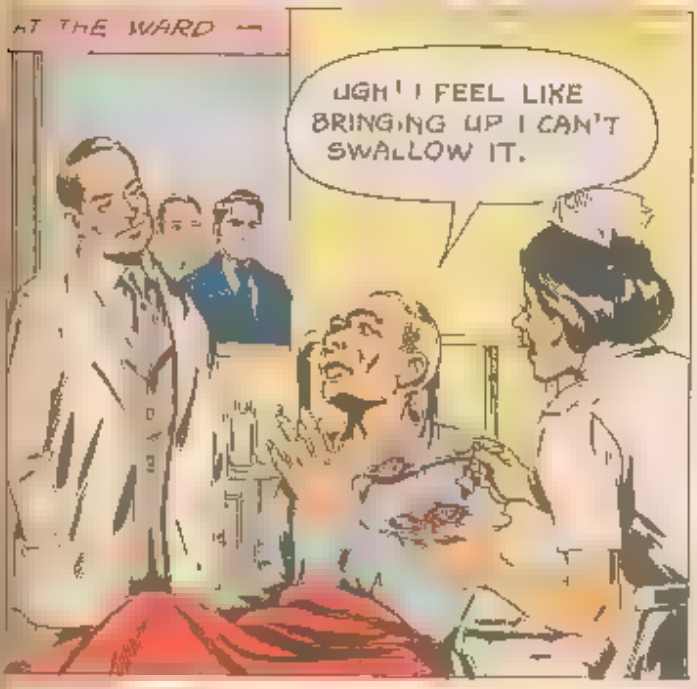


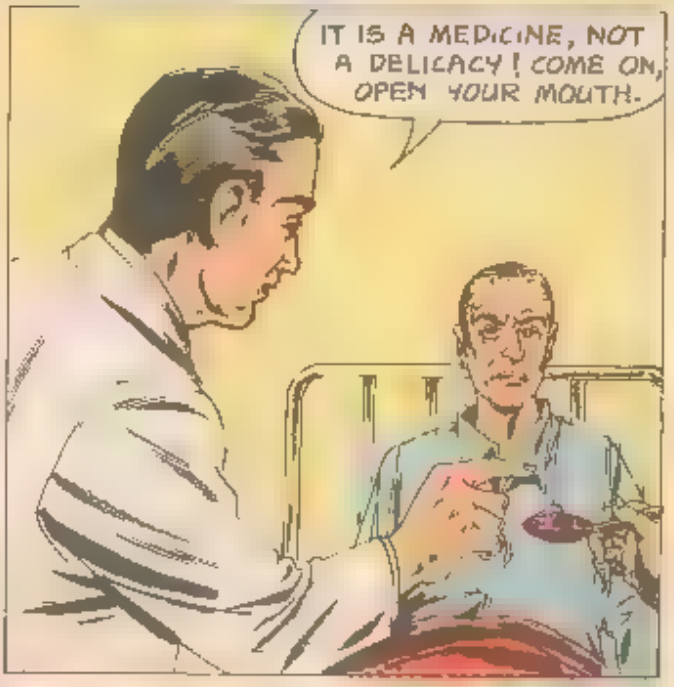

A FEW DAYS LATER —
SUBBAROW, READ THIS JOURNAL. IT'S FROM GERMANY KARL LOHMANN OF MEYERHOFF'S LABORATORY HAS ANNOUNCED THE DISCOVERY OF ATP
REALLY?


AND THIS JOURNAL WAS PUBLISHED SIXTEEN DAYS BEFORE OUR ANNOUNCEMENT AT THE CONFERENCE. THEY HAVE BEATEN US TO IT
IT IS THE DISCOVERY THAT MATTERS, NOT THE DISCOVERER.

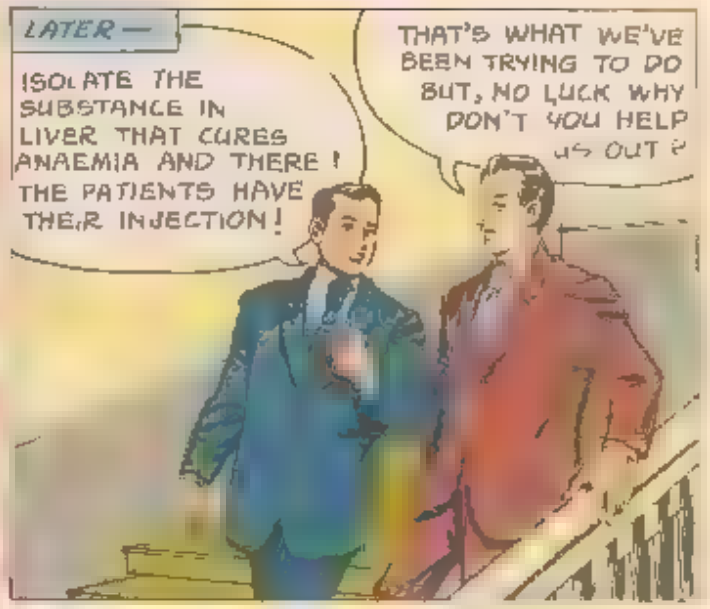

SUBBAROW BY NOW HAD MADE MANY FRIENDS. ONE OF THEM WAS GORDON ALLES, A YOUNG SCIENTIST
I'M WORKING WITH DR COHN ON A CURE FOR PERNICIOUS ANAEMIA.

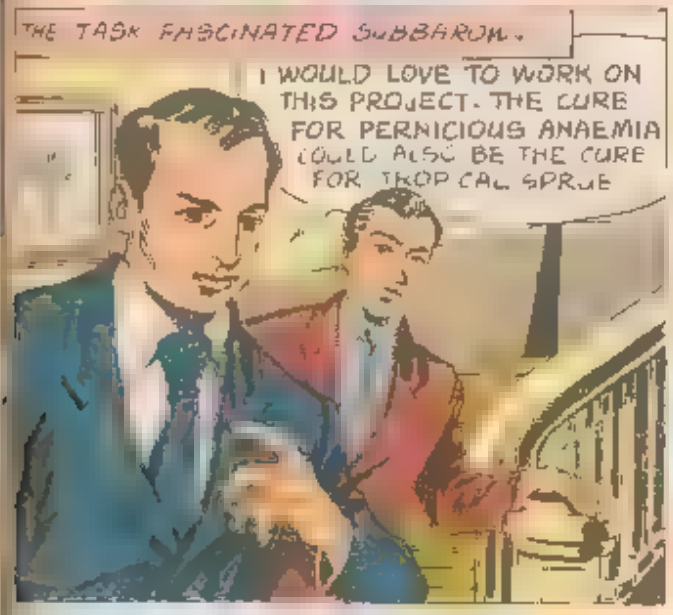
DON'T DAILY DOSES OF BROILED LIVER WORK?
DO YOU WANT TO KNOW HOW OUR PATIENTS REACT TO IT? COME, I'LL SHOW YOU

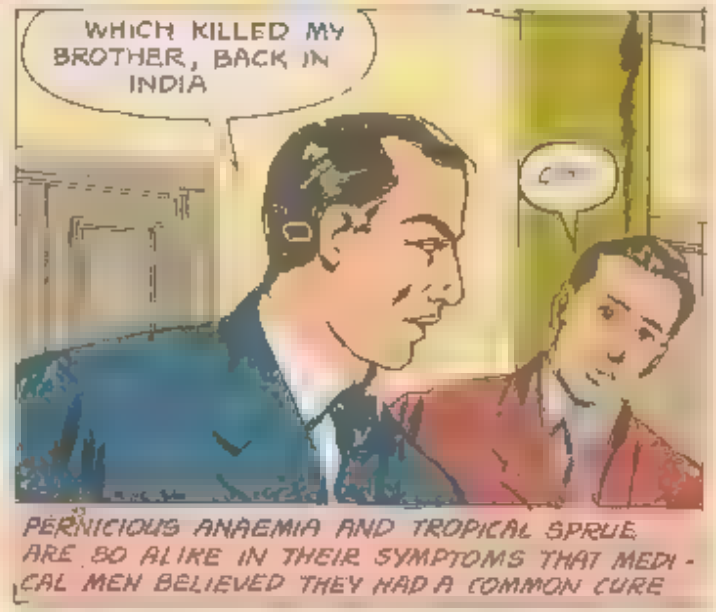

AT THE WARD —
UGH! I FEEL LIKE BRINGING UP I CAN'T SWALLOW IT.

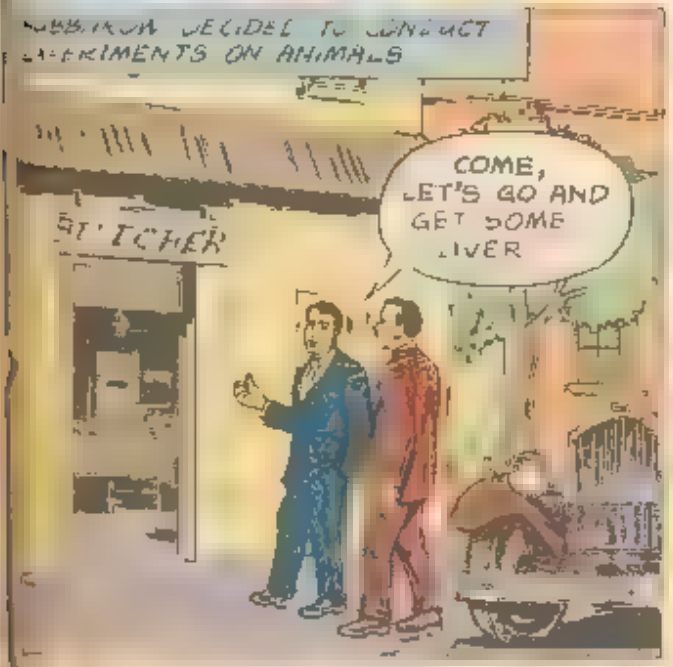

IT IS A MEDICINE, NOT A DELICACY! COME ON, OPEN YOUR MOUTH.

CAN'T YOU GIVE ME AN INJECTION INSTEAD?


LATER —
ISOLATE THE SUBSTANCE IN LIVER THAT CURES ANAEMIA AND THERE! THE PATIENTS HAVE THEIR INJECTION!
THAT'S WHAT WE'VE BEEN TRYING TO DO BUT, NO LUCK WHY DON'T YOU HELP US OUT?

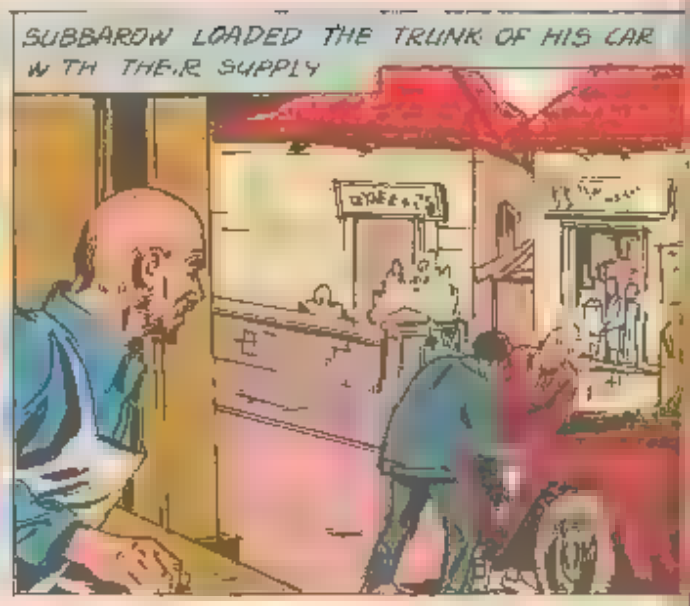

THE TASK FASCINATED SUBBAROW.
I WOULD LOVE TO WORK ON THIS PROJECT. THE CURE FOR PERNICIOUS ANAEMIA COULD ALSO BE THE CURE FOR TROPICAL SPRUE

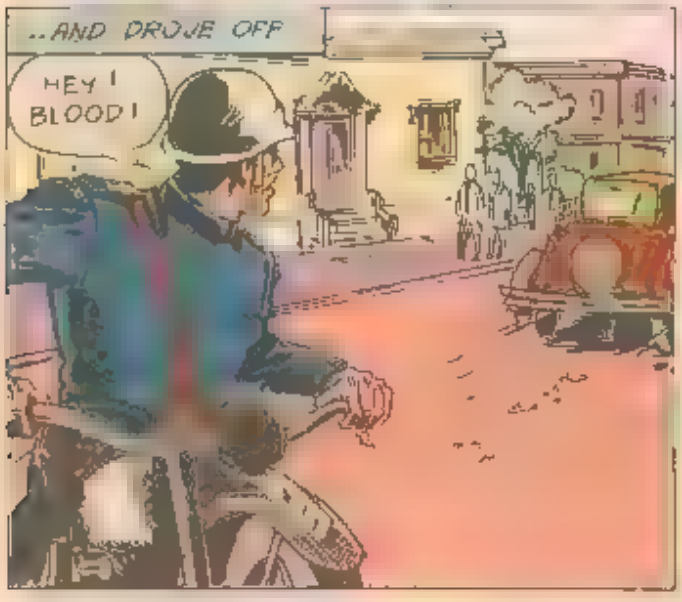

WHICH KILLED MY BROTHER, BACK IN INDIA
PERNICIOUS ANAEMIA AND TROPICAL SPRUE ARE SO ALIKE IN THEIR SYMPTOMS THAT MEDICAL MEN BELIEVED THEY HAD A COMMON CURE

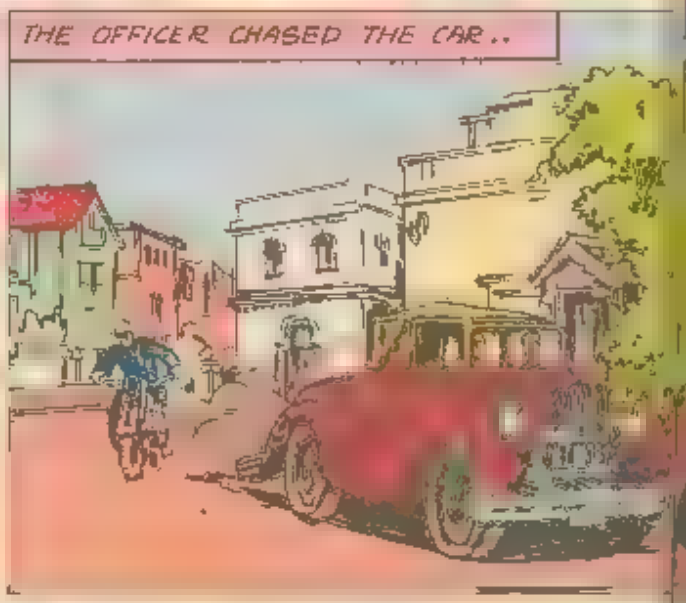

SUBBAROW DECIDED TO CONDUCT EXPERIMENTS ON ANIMALS
BUTCHER
COME, LET'S GO AND GET SOME LIVER

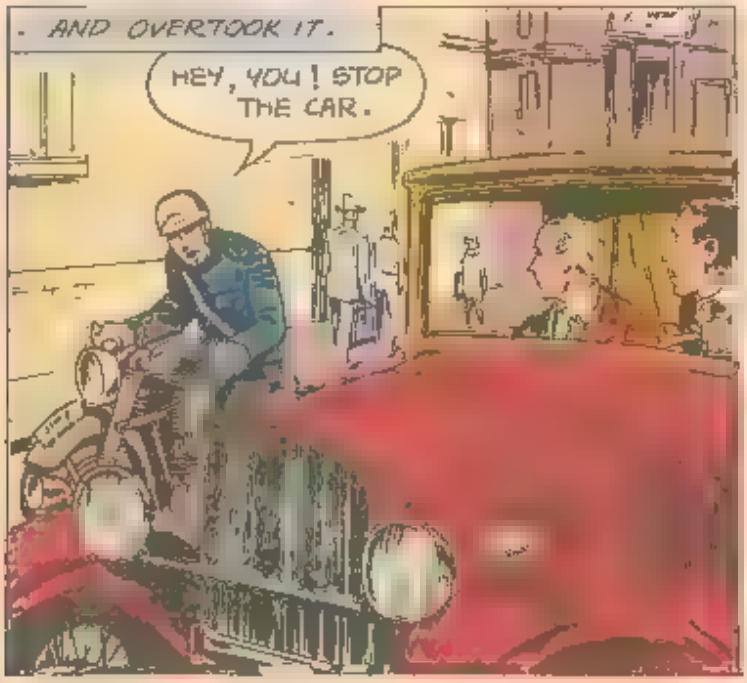
WHAT CAN I DO FOR YOU, SIR?
WE WANT SOME LIVER

..VER ? WE HAVE
AMPLE STOCKS

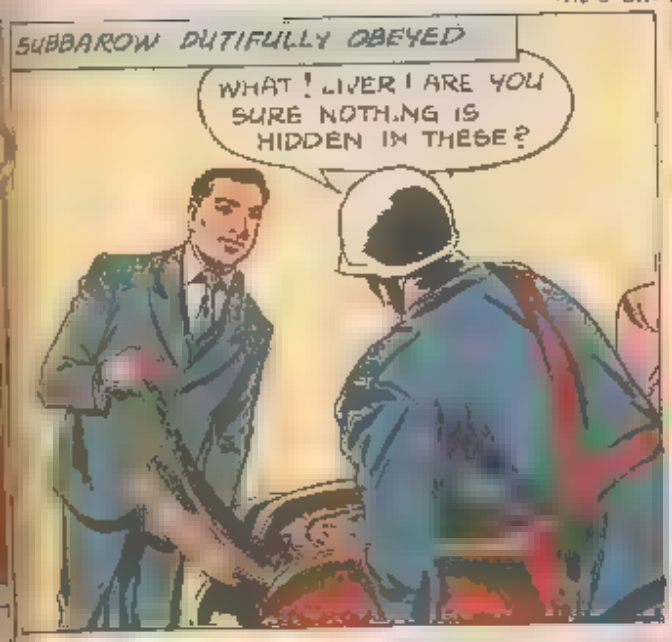

SUBBAROW LOADED THE TRUNK OF HIS CAR
W TH THE.R SUPPLY

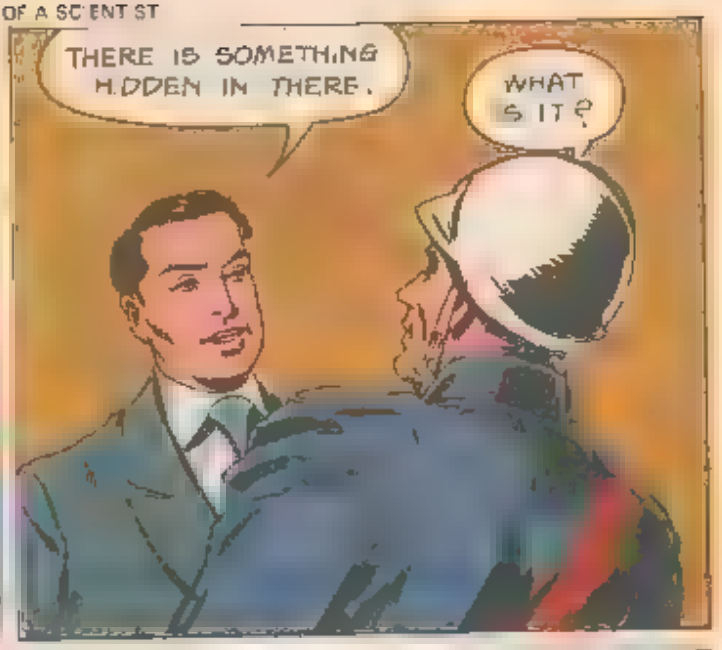

..AND DROVE OFF
HEY !
BLOOD !


THE OFFICER CHASED THE CAR ..

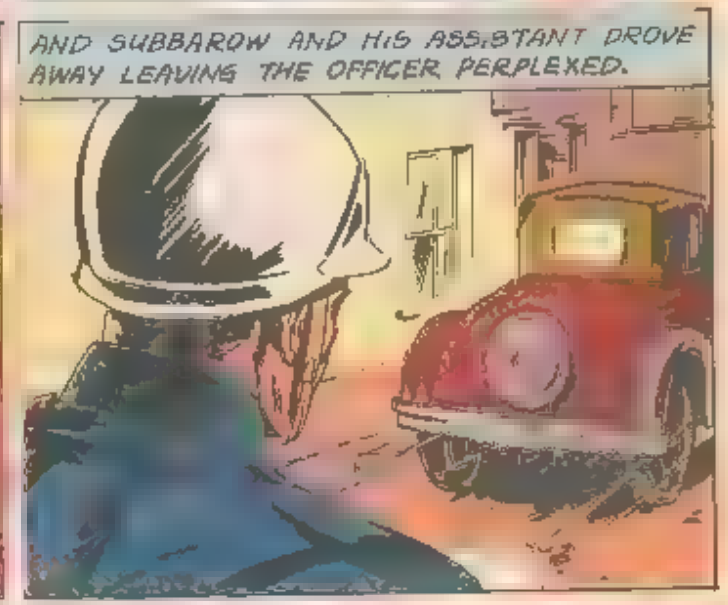

. AND OVERTOOK IT.
HEY, YOU ! STOP
THE CAR.

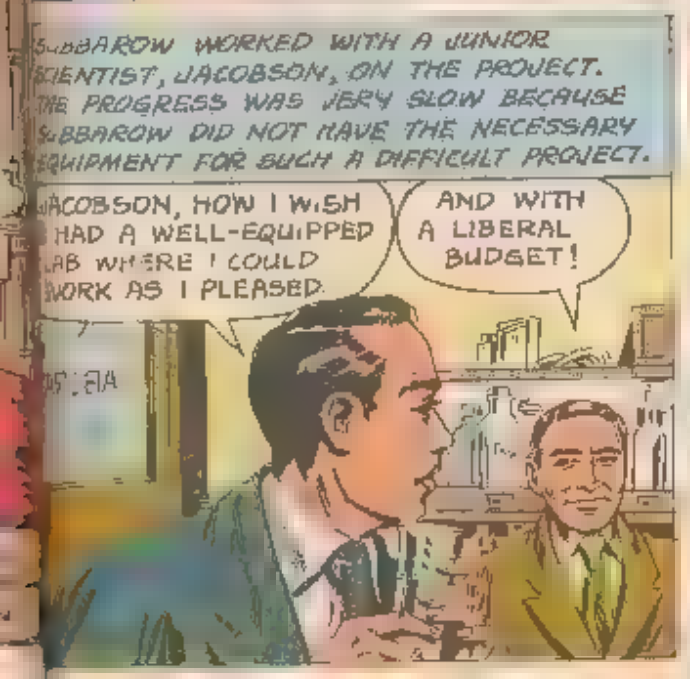
OPEN THE
TRUNK !

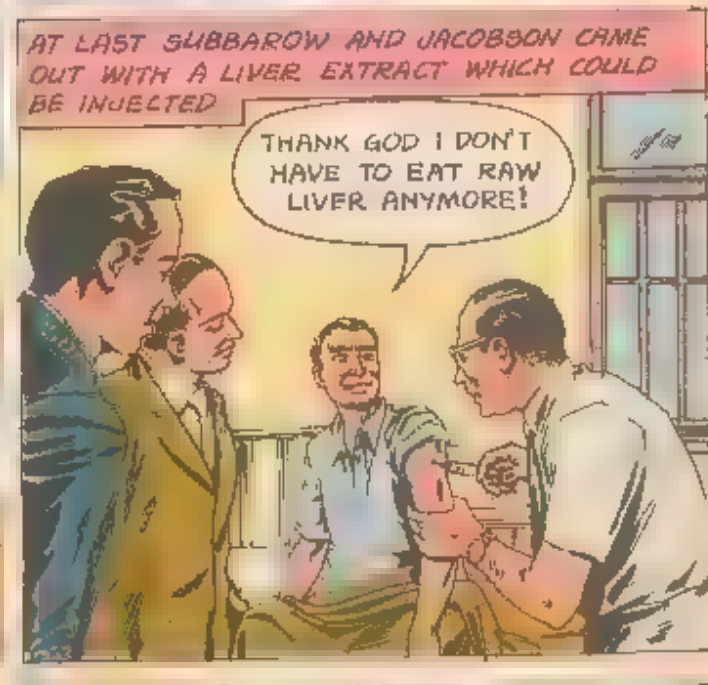

SUBBAROW DUTIFULLY OBEYED
WHAT! LIVER! ARE YOU SURE NOTHING IS HIDDEN IN THESE?

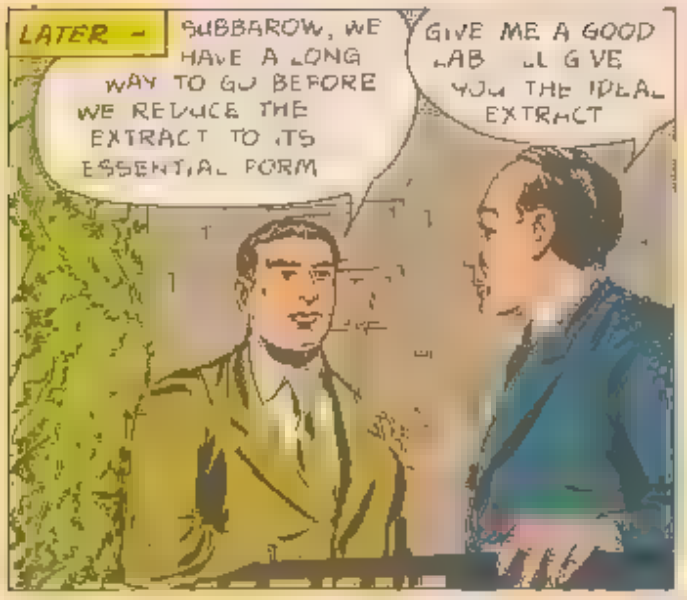

THERE IS SOMETHING HIDDEN IN THERE.
WHAT IS IT?

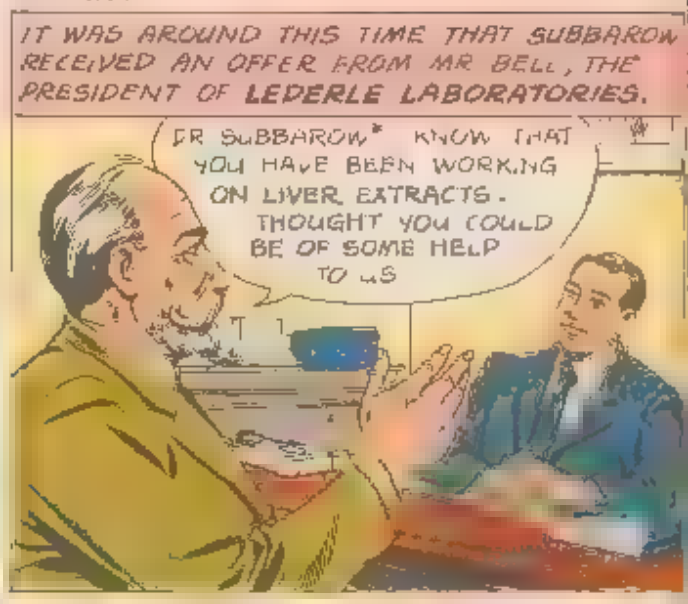
THAT I'LL TELL YOU WHEN I FIND OUT

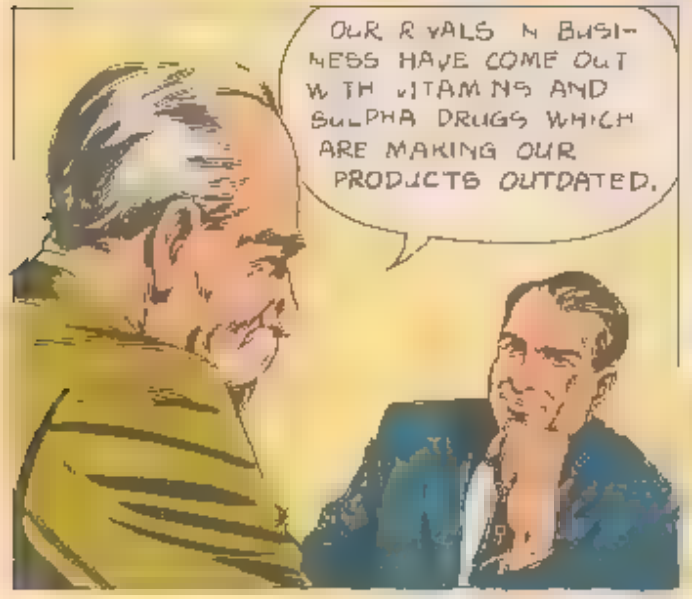

AND SUBBAROW AND HIS ASSISTANT DROVE AWAY LEAVING THE OFFICER PERPLEXED.

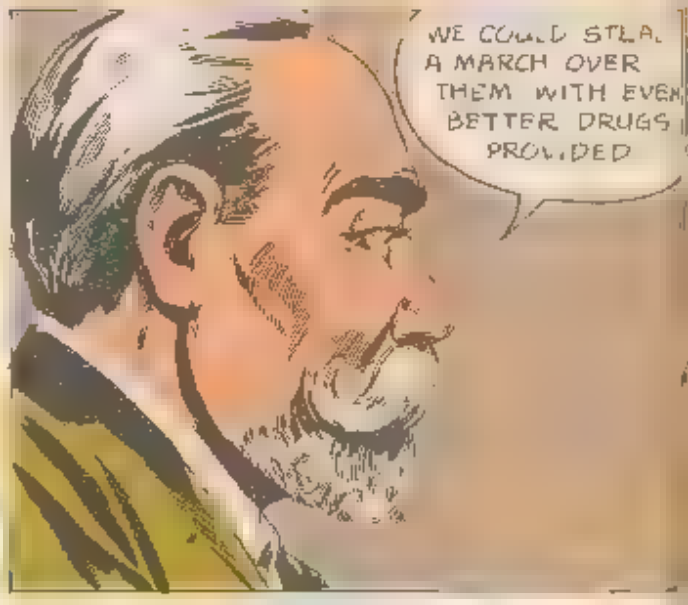

SUBBAROW WORKED WITH A JUNIOR SCIENTIST, JACOBSON, ON THE PROJECT. THE PROGRESS WAS VERY SLOW BECAUSE SUBBAROW DID NOT HAVE THE NECESSARY EQUIPMENT FOR SUCH A DIFFICULT PROJECT.
JACOBSON, HOW I WISH I HAD A WELL-EQUIPPED LAB WHERE I COULD WORK AS I PLEASED.
AND WITH A LIBERAL BUDGET!

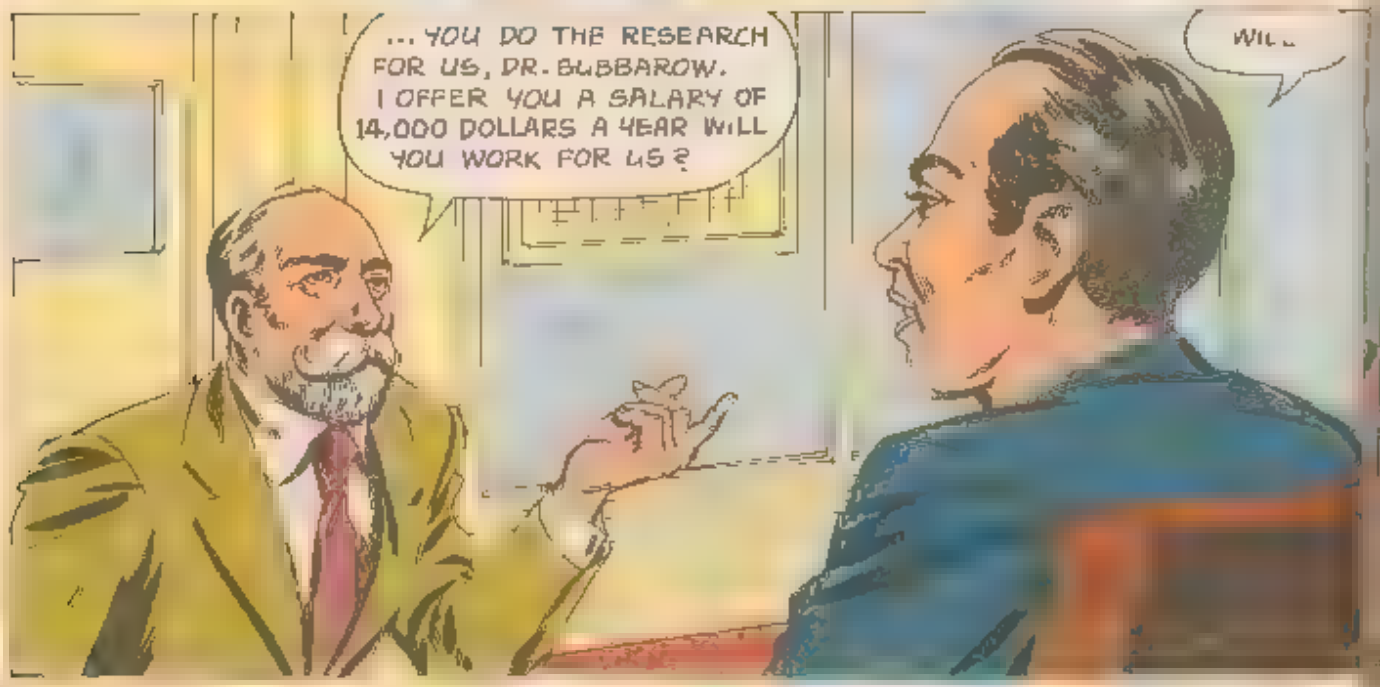

AT LAST SUBBAROW AND JACOBSON CAME OUT WITH A LIVER EXTRACT WHICH COULD BE INJECTED
THANK GOD I DON'T HAVE TO EAT RAW LIVER ANYMORE!


LATER -
SUBBAROW, WE HAVE A LONG WAY TO GO BEFORE WE REDUCE THE EXTRACT TO ITS ESSENTIAL FORM
GIVE ME A GOOD LAB AND I GIVE YOU THE IDEAL EXTRACT

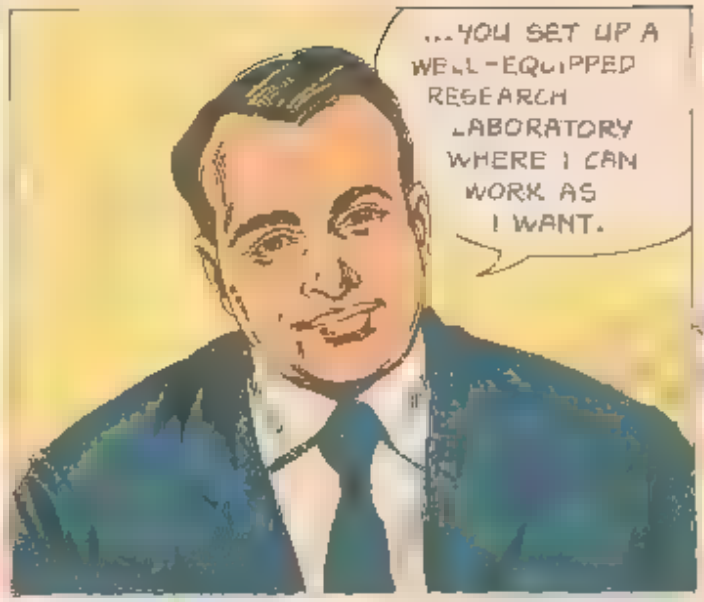

IT WAS AROUND THIS TIME THAT SUBBAROW RECEIVED AN OFFER FROM MR BELL, THE PRESIDENT OF LEDERLE LABORATORIES.
DR SUBBAROW* I KNOW THAT YOU HAVE BEEN WORKING ON LIVER EXTRACTS. I THOUGHT YOU COULD BE OF SOME HELP TO US

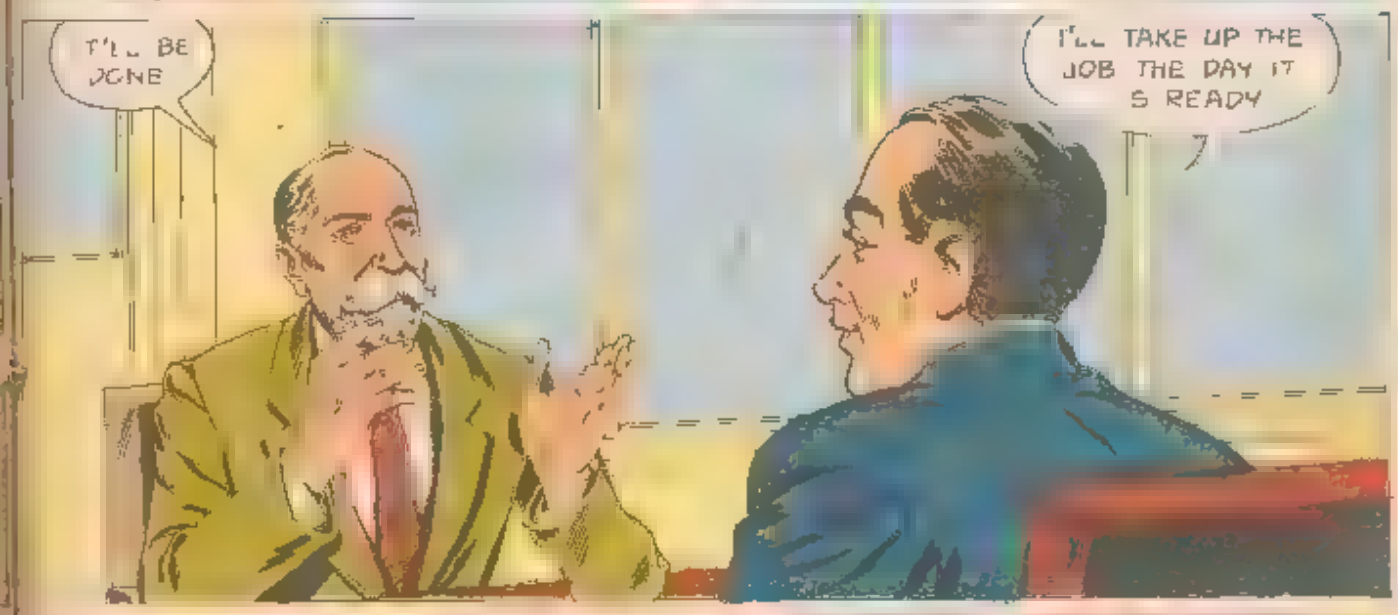

OUR RIVALS IN BUSINESS HAVE COME OUT WITH VITAMINS AND SULPHA DRUGS WHICH ARE MAKING OUR PRODUCTS OUTDATED.


WE COULD STEAL A MARCH OVER THEM WITH EVEN BETTER DRUGS PROVIDED


... YOU DO THE RESEARCH FOR US, DR. SUBBAROW. I OFFER YOU A SALARY OF 14,000 DOLLARS A YEAR WILL YOU WORK FOR US?
WILL

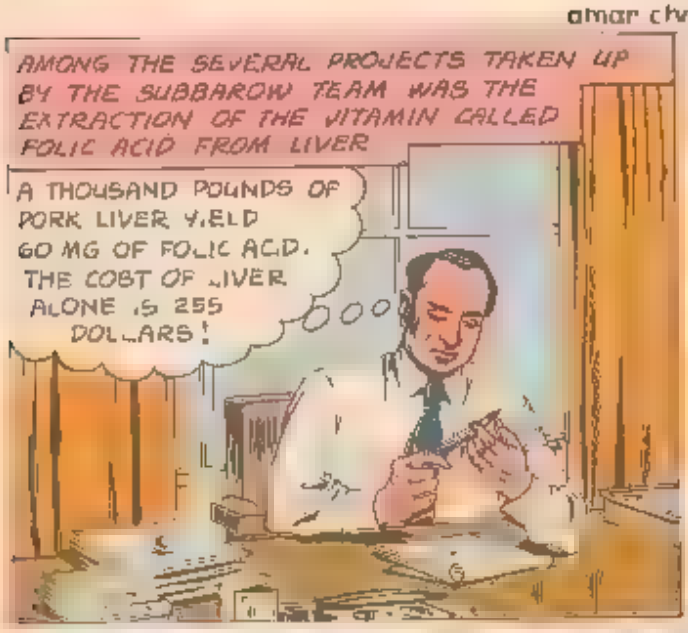
FOR HALF THE AMOUNT PROVIDED..

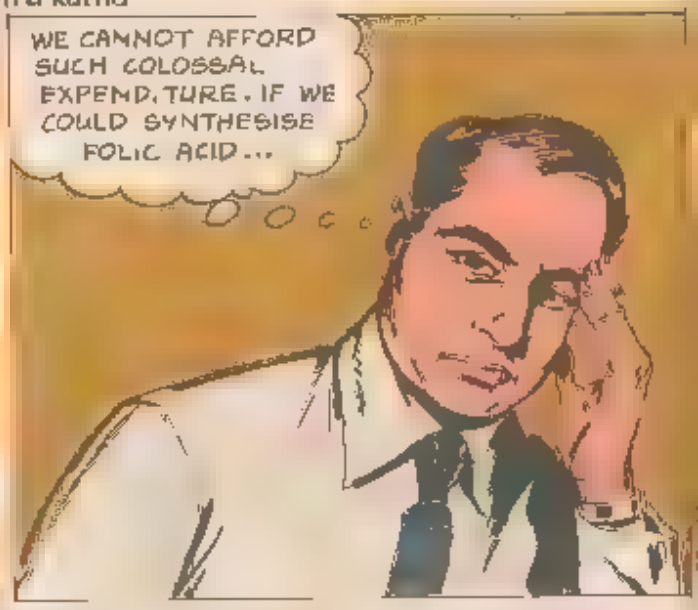

...YOU SET UP A WELL-EQUIPPED RESEARCH LABORATORY WHERE I CAN WORK AS I WANT.

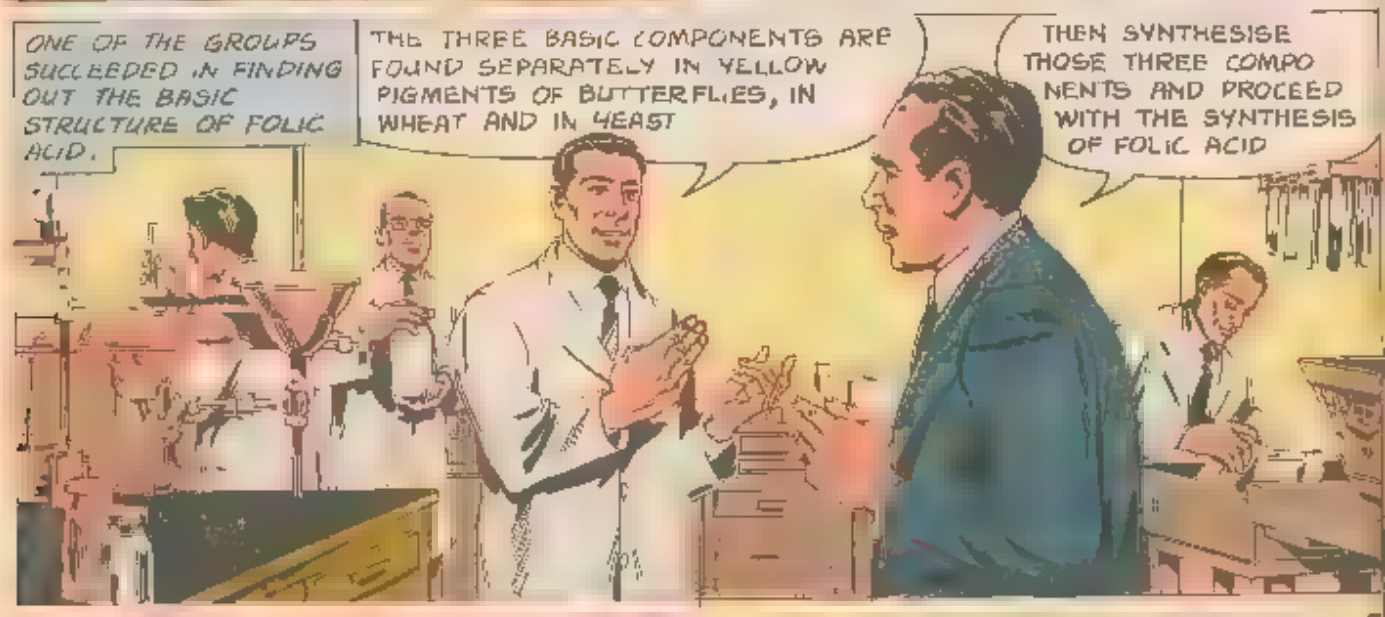

I'LL BE DONE
I'LL TAKE UP THE JOB THE DAY IT IS READY

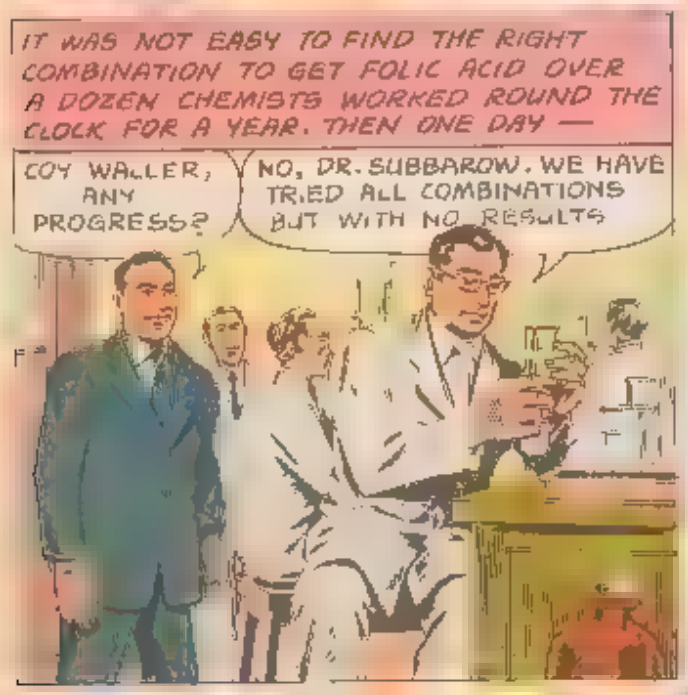
THE DAY SOON CAME WHEN SUBBAROW LEFT HARVARD AFTER SEVENTEEN YEARS OF OUTSTANDING RESEARCH WORK.
HERE IS THE LAB YOU WANTED

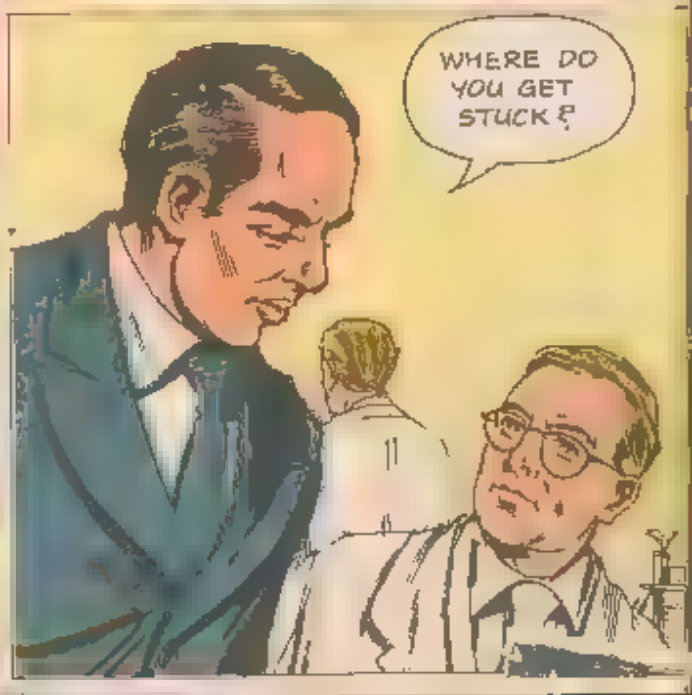
IN 1940 SUBBAROW JOINED LEDERLE LABORATORIES AS AN ASSOCIATE DIRECTOR OF RESEARCH
BOYS WHEN YOU WORK FOR ME, I DON'T KNOW IF YOU WILL GROW RICH BUT YOU SHALL HAVE THE WEALTH OF OPPORTUNITY

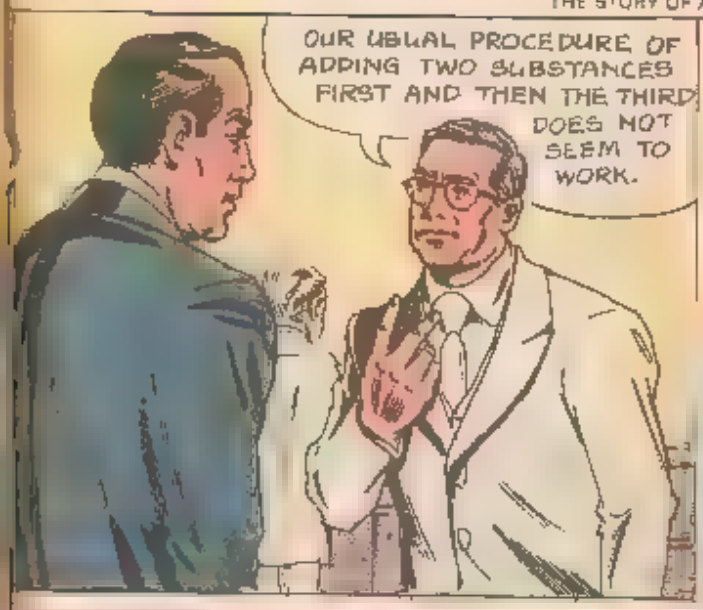

AMONG THE SEVERAL PROJECTS TAKEN UP BY THE SUBBAROW TEAM WAS THE EXTRACTION OF THE VITAMIN CALLED FOLIC ACID FROM LIVER
A THOUSAND POUNDS OF PORK LIVER YIELD 60 MG OF FOLIC ACID. THE COST OF LIVER ALONE IS 255 DOLLARS!

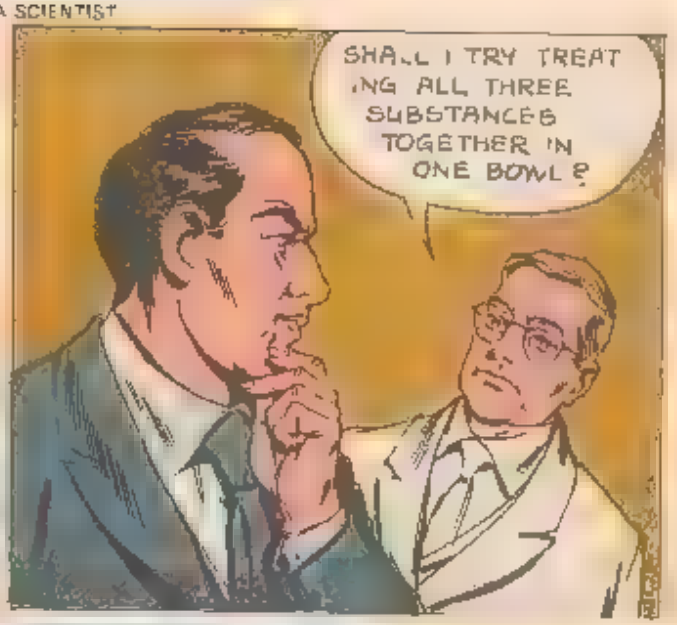

WE CANNOT AFFORD SUCH COLOSSAL EXPENDITURE. IF WE COULD SYNTHESISE FOLIC ACID...

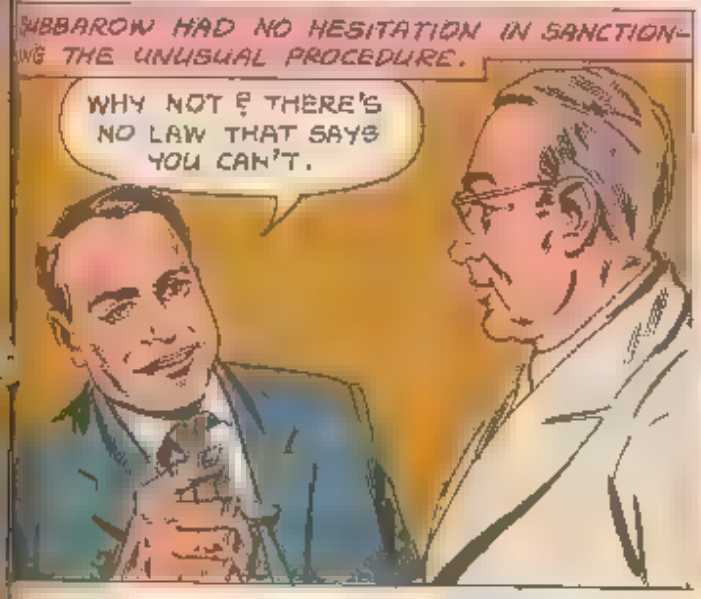

ONE OF THE GROUPS SUCCEEDED IN FINDING OUT THE BASIC STRUCTURE OF FOLIC ACID.
THE THREE BASIC COMPONENTS ARE FOUND SEPARATELY IN YELLOW PIGMENTS OF BUTTERFLIES, IN WHEAT AND IN YEAST
THEN SYNTHESISE THOSE THREE COMPONENTS AND PROCEED WITH THE SYNTHESIS OF FOLIC ACID

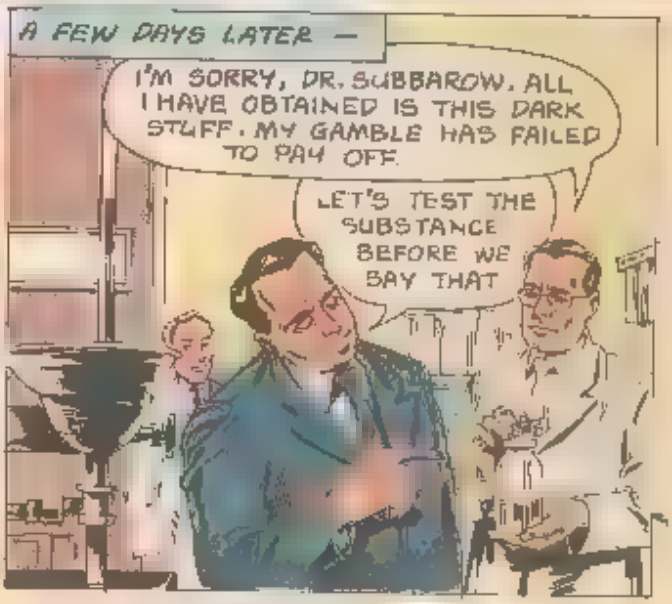

IT WAS NOT EASY TO FIND THE RIGHT COMBINATION TO GET FOLIC ACID OVER A DOZEN CHEMISTS WORKED ROUND THE CLOCK FOR A YEAR. THEN ONE DAY —
COY WALLER, ANY PROGRESS?
NO, DR. SUBBAROW. WE HAVE TRIED ALL COMBINATIONS BUT WITH NO RESULTS


WHERE DO YOU GET STUCK?

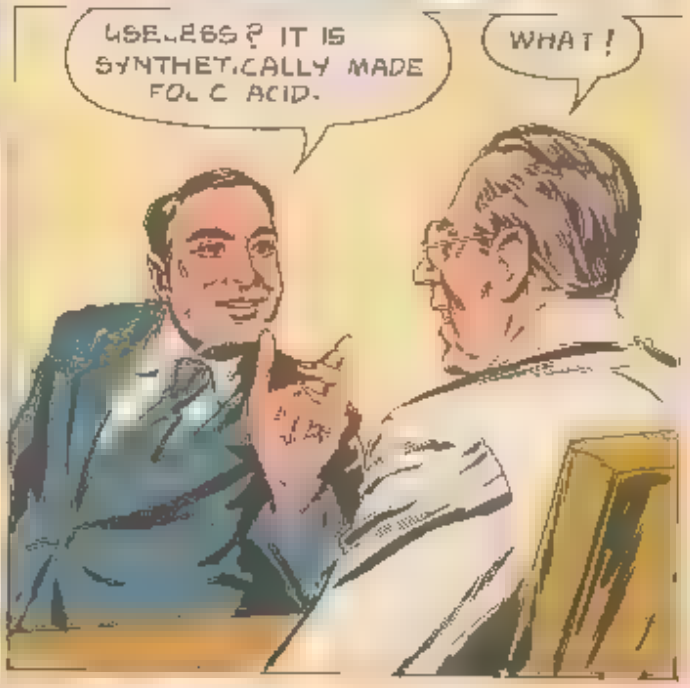

OUR USUAL PROCEDURE OF ADDING TWO SUBSTANCES FIRST AND THEN THE THIRD DOES NOT SEEM TO WORK.


SHALL I TRY TREATING ALL THREE SUBSTANCES TOGETHER IN ONE BOWL?

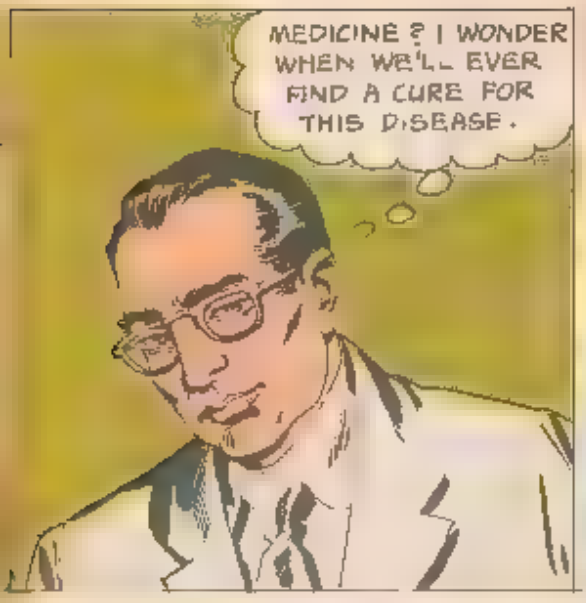

SUBBAROW HAD NO HESITATION IN SANCTIONING THE UNUSUAL PROCEDURE.
WHY NOT? THERE'S NO LAW THAT SAYS YOU CAN'T.

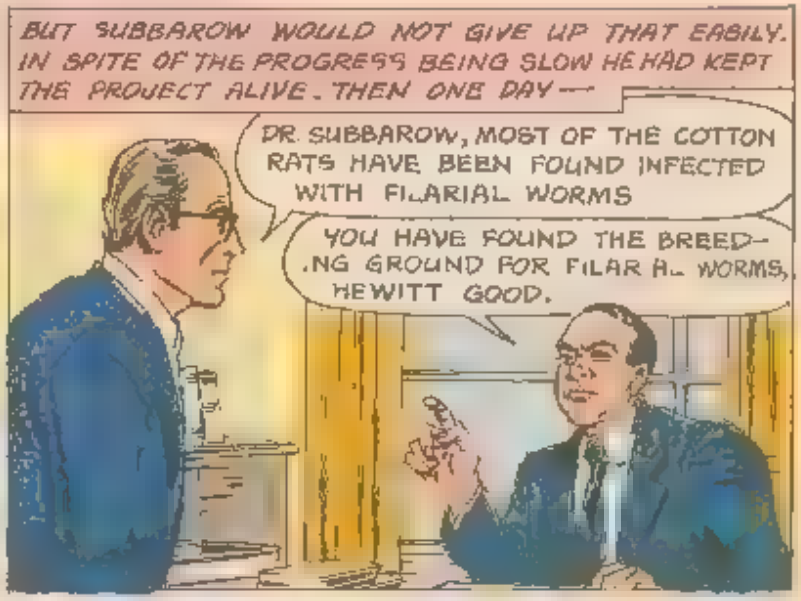

A FEW DAYS LATER —
I'M SORRY, DR. SUBBAROW. ALL I HAVE OBTAINED IS THIS DARK STUFF. MY GAMBLE HAS FAILED TO PAY OFF.
LET'S TEST THE SUBSTANCE BEFORE WE SAY THAT

A FEW DAYS LATER DR. SUBBAROW SENT FOR COY WALLER.
COY WALLER, DO YOU KNOW WHAT YOU HAVE COOKED?
YOU MEAN THAT DARK USELESS STUFF?

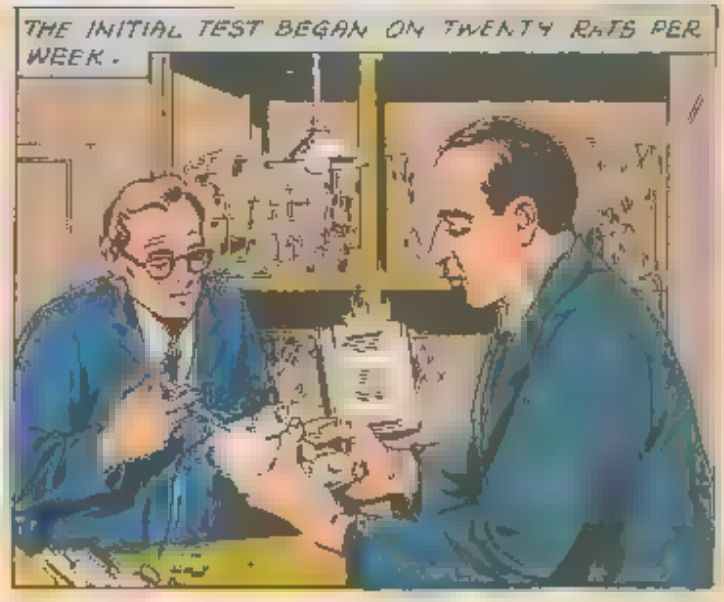

USELESS? IT IS SYNTHETICALLY MADE FOLIC ACID.
WHAT!

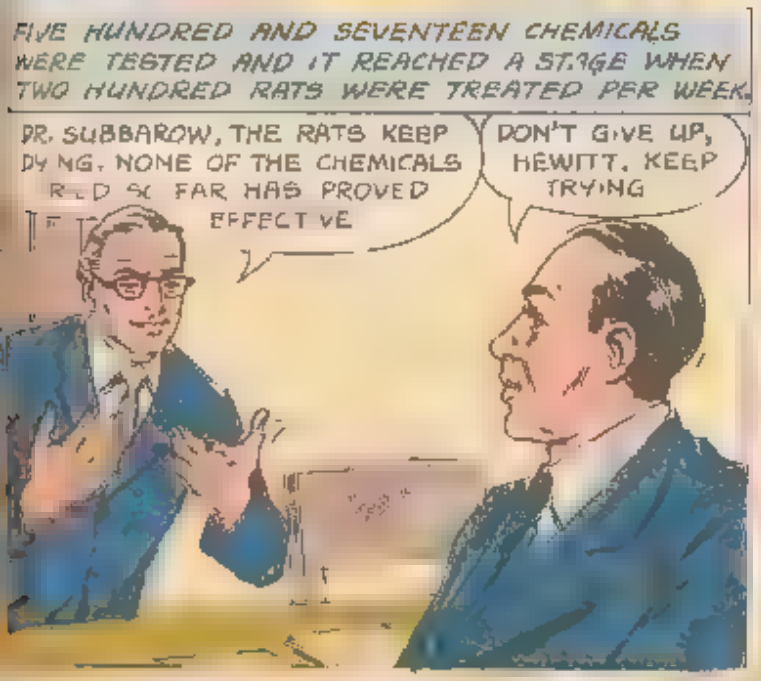
THE NEW MEDICINE HAD TO BE TRIED ON PATIENTS SUFFERING FROM ANAEMIA AND TROPICAL SPRUE. ONE OF THE FIRST REPORTS RECEIVED WAS FROM DR CASTLE.
BAD NEWS. FOLIC ACID IS OF NO USE IN TREATING PERNICIOUS ANAEMIA.
OH!
BUT WHEN REPORTS FROM ANOTHER QUARTER CAME IN -
DR DARBY HAS DECLARED IT A WINNER - IT CURED TROPICAL SPRUE.
SO, AT LAST WE HAVE THE CURE FOR SPRUE WHICH KILLED MY BROTHER!
AFTER A FEW MONTHS, THE DISCOVERY OF FOLIC ACID LED TO THE DISCOVERY OF VITAMIN B12 BY ANOTHER PHARMACEUTICAL COMPANY.
IN THE SCIENTIFIC PAPER ANNOUNCING THE FOLIC ACID SYNTHESIS SUBBAROW CLAIMED NO SPECIAL CREDIT. HE GAVE HIS NAME AS ONE OF THE SIXTEEN SCIENTISTS WHO WERE ASSOCIATED WITH THE PROJECT.
THE ACHIEVEMENTS OF SCIENCE ARE BUILT ON THE EFFORTS OF MANY.
MEANWHILE A TEAM OF SCIENTISTS UNDER SUBBAROW WAS BUSY WITH THE SEARCH FOR A CURE FOR THE DREADED DISEASE, FILARIA. THOUSANDS OF AMERICANS HAD CONTRACTED THIS DISEASE WHEN THEY HAD BEEN POSTED IN THE TROPICAL ISLANDS OF THE PACIFIC DURING WORLD WAR II.
DOCTOR, PLEASE DO SOMETHING FOR ME. I'M GOING THROUGH HELL.
AM TRYING MY BEST. DON'T WORRY. CONTINUE WITH THE MEDICINE HE GIVEN.


MEDICINE ? I WONDER WHEN WE'LL EVER FIND A CURE FOR THIS DISEASE.

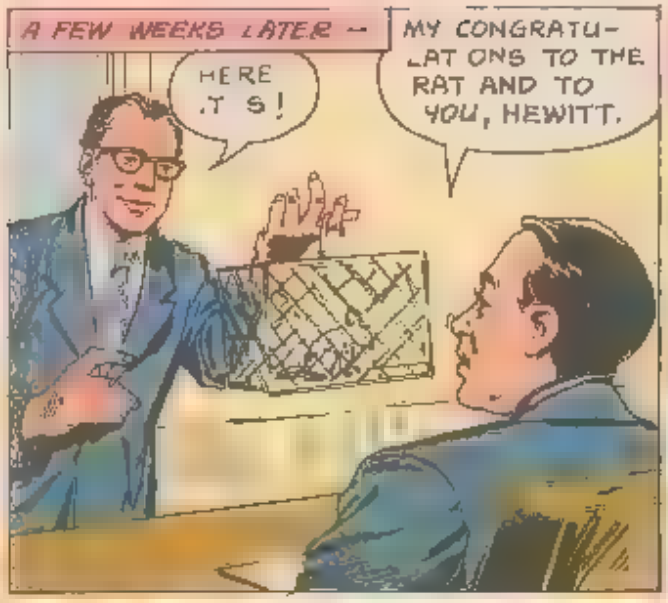

BUT SUBBAROW WOULD NOT GIVE UP THAT EASILY. IN SPITE OF THE PROGRESS BEING SLOW HE HAD KEPT THE PROJECT ALIVE. THEN ONE DAY ---
DR. SUBBAROW, MOST OF THE COTTON RATS HAVE BEEN FOUND INFECTED WITH FILARIAL WORMS
YOU HAVE FOUND THE BREEDING GROUND FOR FILARIAL WORMS, HEWITT GOOD.

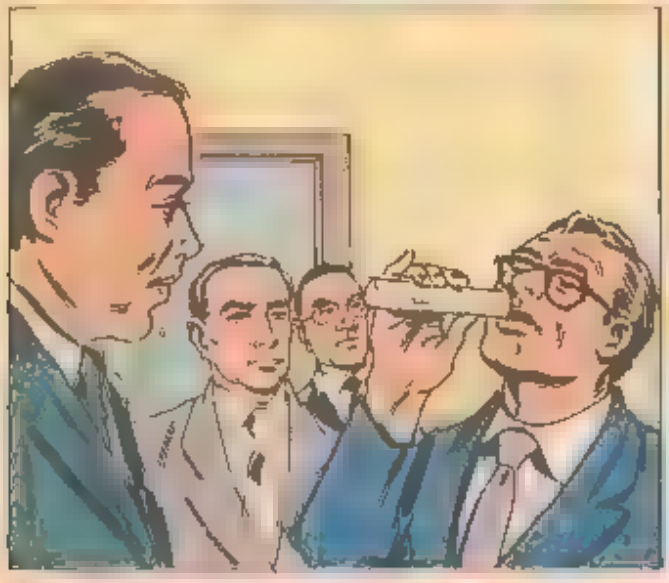
AND I HOPE YOU WILL ALSO FIND THE CHEMICAL THAT WILL DESTROY THOSE WORMS
I'LL TRY

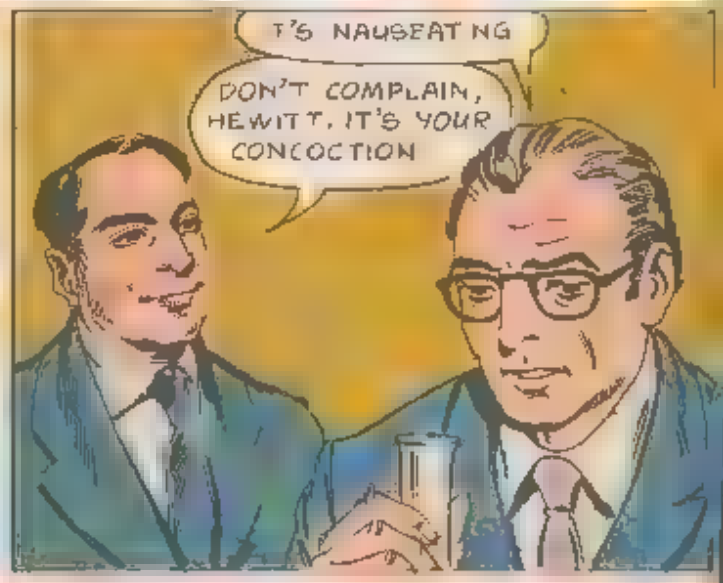

THE INITIAL TEST BEGAN ON TWENTY RATS PER WEEK.

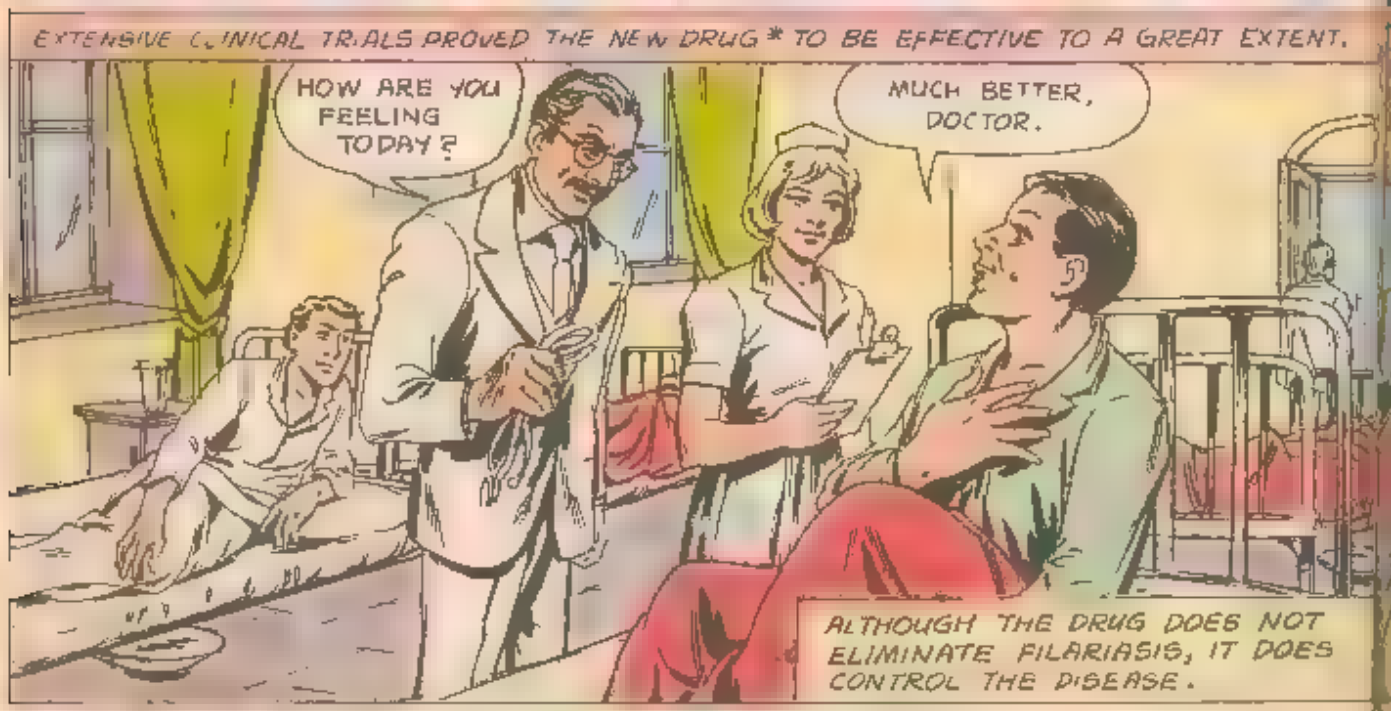

FIVE HUNDRED AND SEVENTEEN CHEMICALS WERE TESTED AND IT REACHED A STAGE WHEN TWO HUNDRED RATS WERE TREATED PER WEEK.
DR. SUBBAROW, THE RATS KEEP DYING. NONE OF THE CHEMICALS TRIED SO FAR HAS PROVED EFFECTIVE
DON'T GIVE UP, HEWITT. KEEP TRYING

AND BRING ME THE RAT THAT SURVIVES



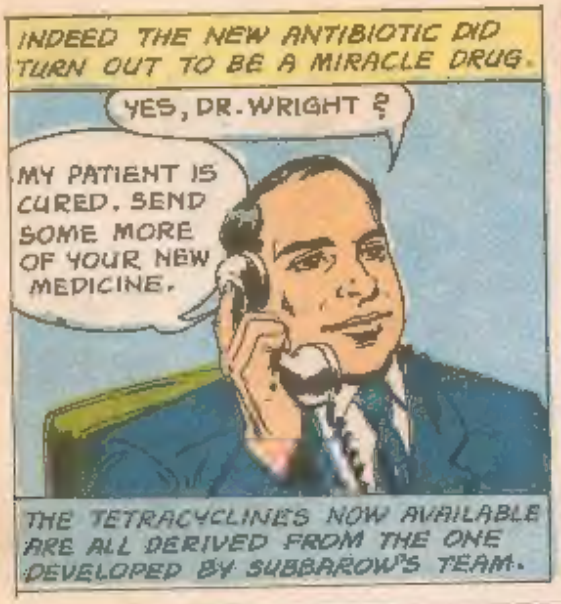




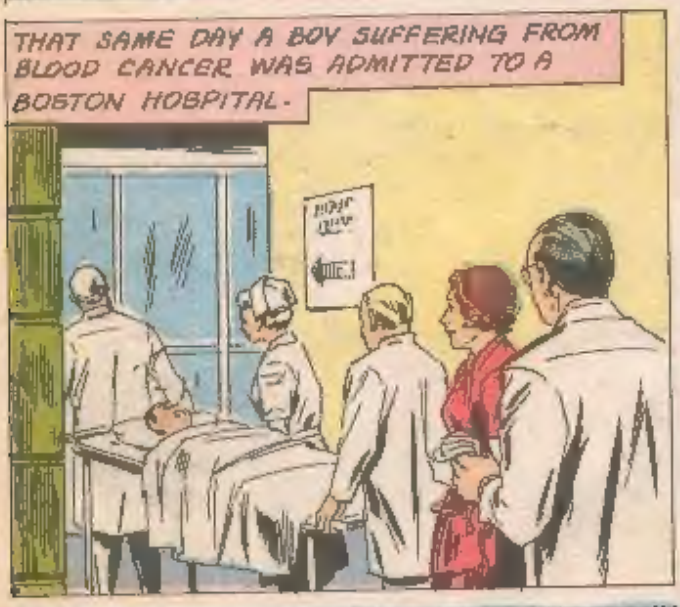


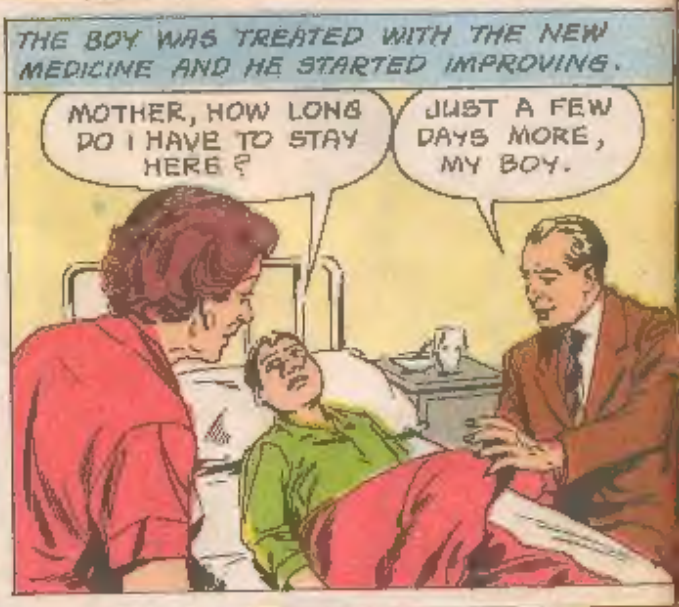
* THE DRUG IS MARKETED UNDER THE BRAND NAME HETRAZAN

*MARKETED FOR THE FIRST TIME UNDER THE NAME AUREOMYCIN


INDEED THE NEW ANTIBIOTIC DID TURN OUT TO BE A MIRACLE DRUG.
YES, DR. WRIGHT ?
MY PATIENT IS CURED. SEND SOME MORE OF YOUR NEW MEDICINE.
THE TETRACYCLINES NOW AVAILABLE ARE ALL DERIVED FROM THE ONE DEVELOPED BY SUBBAROW'S TEAM.

IN THE COURSE OF HIS RESEARCHES, SUBBAROW'S ATTENTION HAD BEEN DRAWN TO CANCER TOO. HIS TEAM CAME OUT WITH A MEDICINE CALLED AMINOPTERIN FOR TREATING CANCER OF THE BLOOD IN CHILDREN.
LET'S ARRANGE FOR A CLINICAL TRIAL.

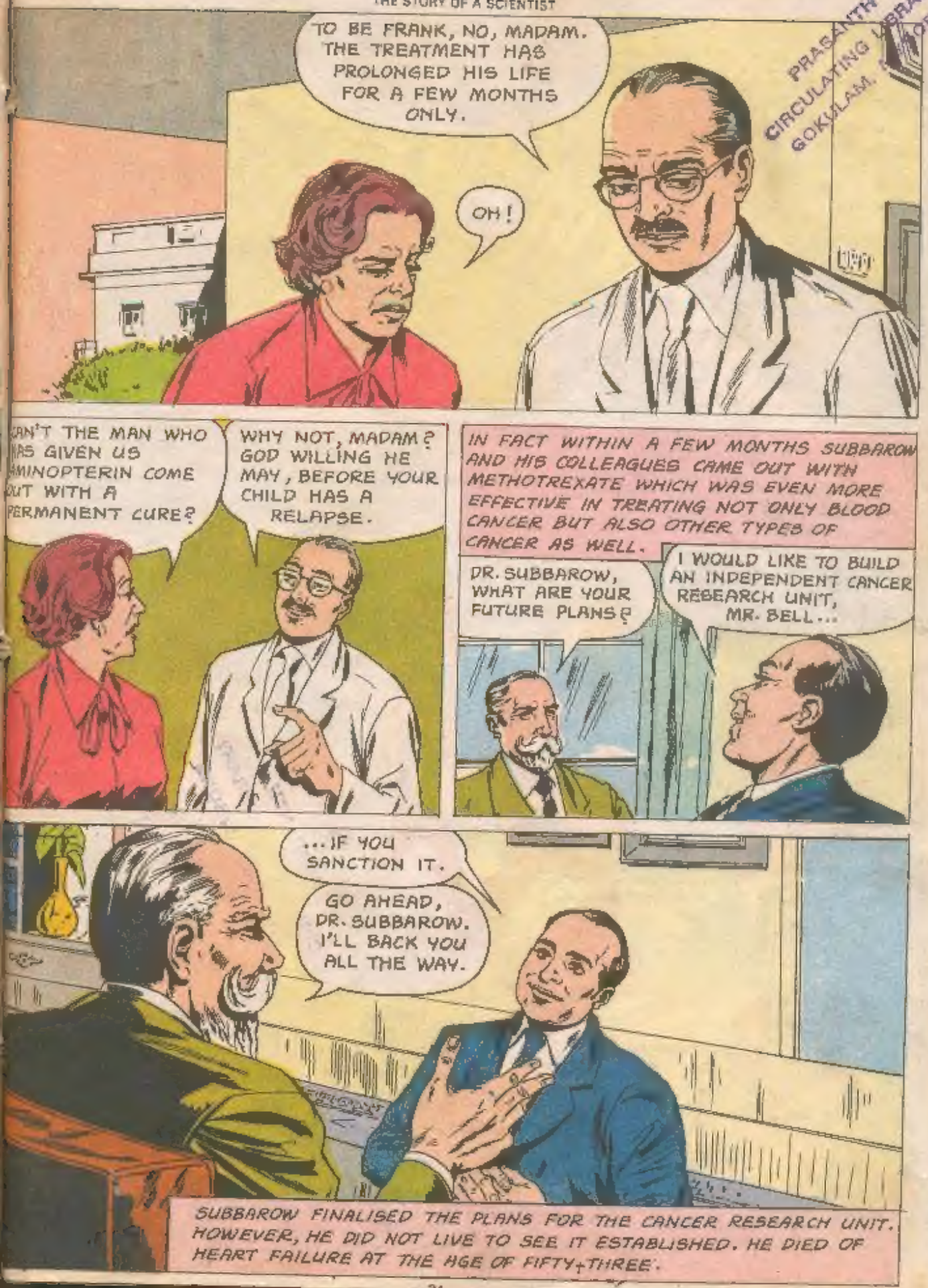

THAT SAME DAY A BOY SUFFERING FROM BLOOD CANCER WAS ADMITTED TO A BOSTON HOSPITAL.


THE BOY WAS TREATED WITH THE NEW MEDICINE AND HE STARTED IMPROVING.
MOTHER, HOW LONG DO I HAVE TO STAY HERE ?
JUST A FEW DAYS MORE, MY BOY.

AT LAST THE TREATMENT WAS OVER AND THE BOY WAS DISCHARGED.
MOTHER, ARE WE GOING HOME TODAY?
YES, MY DEAR, WE CAN NOW GO HOME.

DOCTOR, HAS MY BOY BEEN CURED ?

PRASANTH CIRCULATING LIBRARY GOKULAM, KOZHIKODE



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